GILBARCO
VEEDER-ROOT

PAM™ 5000 Pump Access Module

Service Manual

Computer Programs and Documentation

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This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Approvals

Gilbarco is an ISO 9001:2000 registered company.

Underwriters Laboratories (UL):

U L File#	Products listed with U L
MH1941	All Gilbarco pumps and dispensers that bear the UL listing mark.
MH8467	Transac System 1000 and PAM 1000
E105106	Dell DHM Minitower
E165027	G-SITE and Passport Systems

New York City Fire Department (NYFD):

NYFD C of A #	Product
4805	The Advantage Series and Legacy Series
4986	Encore and Eclipse

California Air Resources Board (CARB):

Executive Order #	Product
G-70-52-AM	Balance Vapor Recovery
G-70-150-AE	VaporVac

National Conference of Weights and Measures (NCWM) - Certificate of Conformance (CoC):

Gilbarco pumps and dispensers are evaluated by NCWM under the National Type Evaluation Program (NTEP). NCWM has issued the following CoC:

CoC#	Product	Model #	CoC#	Product	Model #	CoC#	Product	Model #
02-019	Encore	Nxx	02-026	H11B Series	AC, RAC	02-034	External Mount CRIND	CECXXXXXXX
02-020	Eclipse	Exx		MPD-1 Series	AN, RAN	02-035	Dimension	Dxx
02-021	T-12C Console	PA0188, RA0188	02-027	Fixed Blender	AF, RAF, AG, RAG	02-036	Legacy	Jxxx
	T-12C Console	PA0203, RA0203		Dispenser - Low Profile	AR, RAR	02-037	G-SITE Printer (Epson)	PA0307
02-022	T-12G Console	PA0180, RA0180	02-028	Indoor Card	Q11640		G-SITE Distribution Box	PA0306
	T-15 Console	PA0189		Outdoor Card	Q11891		G-SITE Keyboard	PA0304
02-023	T-15 Controller C2	PA0211	02-029	CRIND	—		G-SITE Mini Tower	PA0301
	T-15 Controller	PA0190		TS-1000 Console	PA0240		G-SITE Monitor	PA0303
	ProBlender	AU, RAU		TS-1000 Controller	PA0241		G-SITE Printer (Citizen)	PA0308
	Precision Blender	AE, RAE	02-030	Distribution Box	PA0242	02-038	C+ Meter	T19976
02-024	Dispenser - Standard	AK, RAK		Micro-T Console	PA0250	02-039	Passport	PA0324
	Dispenser - Low Profile	AL, RAL		Meter - EC Series	PA024EC10	02-040	Ecometer	T20453
	Fixed Blender	AP, RAF		VaporVac Kits	CV			
02-025	Meter - C Series	PA024NC10	02-031	The Advantage Series	Bxx, RBxx			
	Meter - C Series	PA024TC10	02-032	Trimline Series	AA, RAA			
	Salesmaker ProBlender	AB, RAB	02-033	Meter - C Series	PA024XC10			
99-165	Salesmaker Series 2/2H/4/4A	AM		MPD-A3 Series	AD, RAD			

Patents

Gilbarco Inc. products are manufactured or sold under one or more of the following US patents:

Dispensers

4,566,504	4,556,927	4,570,686	4,687,033	4,728,788	4,748,846	4,799,940	4,805,453	4,876,653	4,890,210	4,913,813	4,930,655	4,934,565	4,938,054
4,938,251	4,939,730	4,967,366	4,986,445	5,040,577	5,098,179	5,134,548	5,156,199	5,269,353	5,228,084	5,325,706	5,345,979	5,355,915	5,363,988
5,384,850	5,407,115	5,417,256	5,448,638	5,450,883	5,464,466	5,501,246	5,535,130	5,542,458	5,543,849	5,546,981	5,557,084	5,571,310	5,602,745
5,626,649	5,630,528	5,708,580	5,719,779	5,719,781	5,720,325	5,724,067	5,734,851	5,755,854	5,782,275	5,794,667	5,798,931	5,803,136	5,843,212
5,857,500	5,868,179	5,871,651	5,890,520	5,954,080	5,956,259	5,969,691	5,971,042	5,979,705	5,980,090	6,026,866	6,052,629	6,073,840	6,078,888
6,078,896	6,082,415	6,085,775	6,087,954	6,089,284	6,092,410	6,098,879	6,102,085	6,109,477	6,112,134	6,113,039	6,116,505	6,119,110	6,123,118
6,149,033	6,167,923	6,176,421	6,184,846	6,185,307	6,185,893	6,196,065	6,227,227	6,244,310	6,250,151	6,253,779	6,263,319	6,275,746	6,296,148
6,302,165	6,313,737	6,325,112	6,326,934	6,336,479	6,338,369	6,347,649	6,352,176	6,357,493	6,360,137	6,363,299	6,364,206	6,380,853	6,381,514
6,386,246	6,418,983	6,421,616	6,422,464	6,431,226	6,438,452	6,460,579	6,463,389	6,466,842	6,470,233	6,493,440	6,499,516	6,505,134	6,522,947
6,523,744	6,529,800	6,532,999	6,535,726	6,546,882	6,571,151	6,571,201	6,573,884	6,574,603	6,578,145	6,618,362	6,644,360	6,681,814	6,685,089
6,690,275	6,697,705	6,704,774	6,708,797	6,710,701	6,712,101	6,721,669	6,736,313	6,741,909	6,745,104	6,761,190	6,763,974	6,766,949	RE35,238
D262,971	D265,092	D306,719	D309,144	D316,471	D413,124	D413,311	D413,336	D413,337	D413,610	D413,901	D413,902	D414,192	D414,501
D414,778	D414,779	D414,780	D414,781	D414,782	D415,166	D415,167	D415,168	D415,169	D415,170	D415,171	D415,172	D415,501	D415,777
D416,915	D416,916	D417,226	D418,523	D420,684	D421,612	D422,285	D422,604	D426,555	D428,424	D428,897	D429,739	D429,740	D431,039
D431,252	D431,573	D432,140	D432,141	D432,548	D432,552	D433,031	D433,032	D433,033	D433,034	D433,035	D433,036	D433,037	D433,420
D433,421	D433,422	D433,423	D433,424	D433,685	D433,686	D433,687	D433,688	D434,424	D434,780	D435,051	D440,579	D443,624	D456,820
D457,084													

Point of Sale/Back Office Equipment

4,967,366	5,228,084	5,448,638	5,798,931	5,980,090	5,708,580	5,719,779	5,719,781	5,724,067	5,734,851	6,073,840	6,078,888	6,116,505	6,185,307
6,263,319	6,275,746	6,326,934	6,360,137	6,363,299	6,364,206								

Trademarks

Non-registered trademarks

C-PAM™	G-SITE® Lite™	Surge Management System™
CIM™	Highline™	Tank Monitor™
ECR™	MultiLine™	TCR™
EMC™	Optimum™ Series	Ultra-Hi™
G-CAT™	PAM™ 1000	ValueLine™
Gilbert™	PAM™	
G-Poll™ Interface	SMART Connect™	
SmartPad™		

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Gilbarco®	Transac®	Eclipse®
InfoScreen®	Trimline®	TRIND®
Legacy®	VaporVac®	Passport®
Making Things Better®	G-SITE®	CRIND®
MPD®	Transac® System 1000	Performer®
		e-CRIND®

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1 – Introduction

Purpose

This document provides a description of the PAM™ 5000 Pump Access Module system components and general service information.

The document is intended for technicians who configure PAM-related setup or service PAM 5000 systems.

The document assumes that the reader has basic user knowledge about standard PC technologies such as Windows®, and Internet browsers such as Microsoft Internet Explorer or Mozilla Firefox®.

Required Tools

The following tools are required for the configuration of the PAM 5000 system components:
- Large slotted screwdriver
- Small slotted screwdriver
- Phillips® head screwdriver
- 7/32" Nut Driver
- Flat head screwdriver

Related Documents

Document Number	Title	GOLD Library
MDE-2713	Universal Distribution Box - Installation Manual	POS Peripheral Devices
MDE-2714	Universal Distribution PA0261XXXXXXX Service Manual	POS Peripheral Devices
MDE-4676	PAM 5000 Pump Access Module Installation Manual	Transac® Products
PT-1869	Recommended Spare Parts for Domestic Products	Parts Manual
PT-1877	Retail Automation Products Illustrated Parts Manual	Parts Manual

Common Terms

Term	Definition
CPB509	Central Processor Board 509 (Main Board)
DSB PORT (Pumps)	Port with DOMS (Gilbarco®) Serial Bus Hardware Interface. The DSB ports are numbered 11 to 15 on the CPU board (11: POS Port, 12-14: Pump Ports, 15: Not used).
DSB PORT (CRINDs)	Port 21: CRIND Port
DSB Module	DSB 500 (RS-232/RS-422/45 mA Current Loop) or DSB 492 (45 mA Current Loop).
LSP	Local Service Panel and Display onboard
Port	Physical communication connection point, for example, a COM Port in a PC. A communication port on the PAM 5000 mainboard for connection of PAM DSB Modules. The ports are numbered from 11-14 (Pumps) and 21-23 (CRINDs).
Protocol	A set of rules for communication between devices.
PAM 5000	The PAM 5000 Pump Access Module is a communications interface device that allows a third-party POS console to control up to 36 Gilbarco fueling positions.
Service PORT	Communication port for connection of a Service PC via a RS-232 connection (Null Modem) to the CPB509

Abbreviations and Acronyms

Term	Description
BEL	Board Error Log
CPU	Central Processing Unit
FTP	File Transfer Protocol
LAM	Legal Authority Module (Not used with the PAM 5000)
LAN	Local Area Network
LCD	Liquid Crystal Display
PAM	Pump Access Module
PC	Personal Computer
POS	Point of Sale
PPP	Point to Point Protocol
PROM	Programmable Read Only Memory
PSU	Power Supply Unit
RTC	Real Time Clock
USD	US Dollars
WAN	Wide Area Network

PAM 5000 Architectural Overview

PAM 5000 with Connection for Pumps and POS

Figure 1-1: PAM 5000 with Connection for Pumps and POS
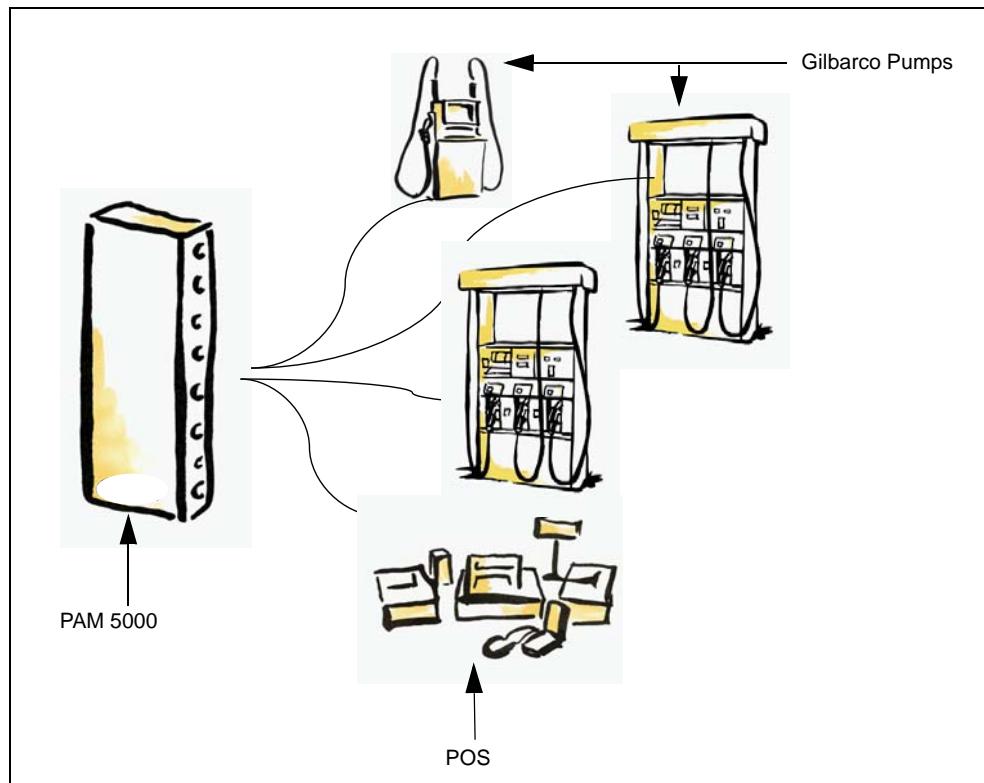
PAM 5000, Diagnostic Connection

It is possible to access the PAM 5000 remotely via a Network connection (Ethernet) or locally, using a Null modem connection to a PC.

Figure 1-2: PAM 5000, Diagnostic Connection
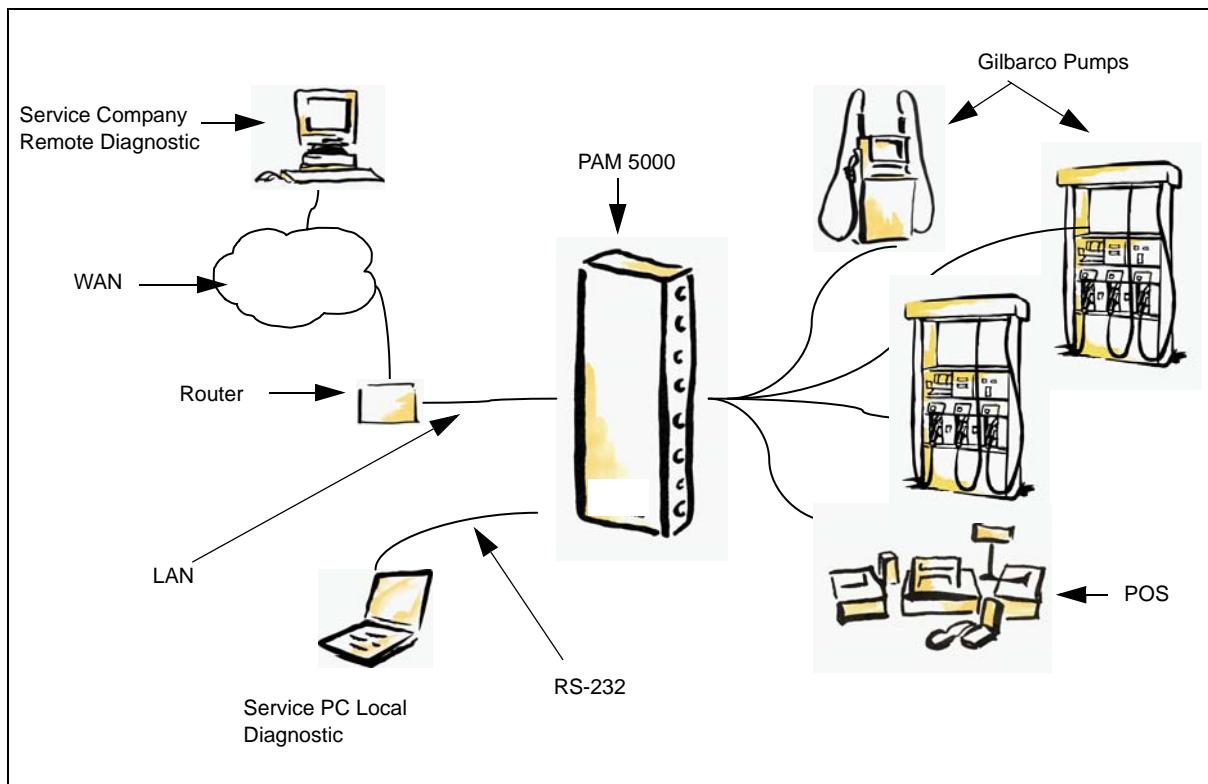
2 – Important Safety Information

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions
You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Emergency Total Electrical Shut-Off
The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING

The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access
Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

Evacuating, Barricading and Shutting Off
Any procedure that requires access to the pump/dispenser or STPs requires the following actions:

- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit (s)
- A total electrical shut-off of the affected unit (s)

Read the Manual
Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gilbarco Authorized Service Contractor or call the Gilbarco Support Center at 1-800-800-7498. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations
Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC),* Occupational Safety and Hazard Association (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts
Use only genuine Gilbarco replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gilbarco replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words
This section provides important information about warning symbols and boxes.

Alert Symbol

This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words
These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:

DANGER: Alerts you to a hazard or unsafe practice which will result in death or serious injury.

WARNING: Alerts you to a hazard or unsafe practice that could result in death or serious injury.

CAUTION with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage

Working With Fuels and Electrical Energy

Prevent Explosions and Fires
Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

No Open Fire

Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/ Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/ Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

⚠ **WARNING**

The pump/dispenser contains a chemical known to the State of California to cause cancer.

⚠ **WARNING**

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:
- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

⚠ **WARNING**

Gasoline ingested may cause unconsciousness and burns to internal organs.
Do not induce vomiting.
Keep airway open.
Oxygen may be needed at scene.
Seek medical advice immediately.

⚠ **WARNING**

Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.
Keep airway open.
Seek medical advice immediately.

⚠ **WARNING**

Gasoline spilled in eyes may cause burns to eye tissue.
Irrigate eyes with water for approximately 15 minutes.
Seek medical advice immediately.

⚠ **WARNING**

Gasoline spilled on skin may cause burns.
Wash area thoroughly with clear water.
Seek medical advice immediately.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/ Tagout provision for electrical hazards.

Hazards and Actions

> ⚠️ **WARNING**
>
> Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.
> Fire or explosion may result, causing serious injury or death.
> Follow established emergency procedures.
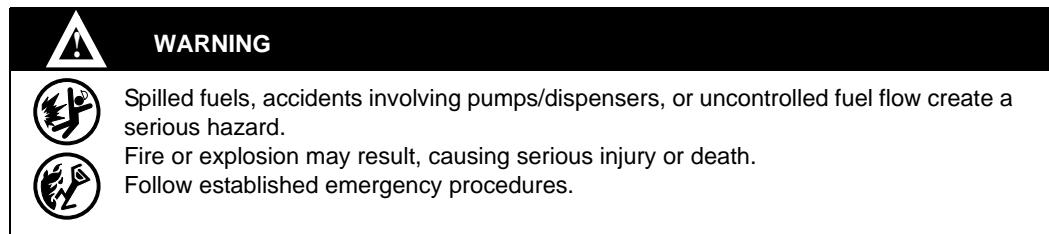
The following actions are recommended regarding these hazards:

Collision of a Vehicle with Unit   Fire at Island   Fuel Spill
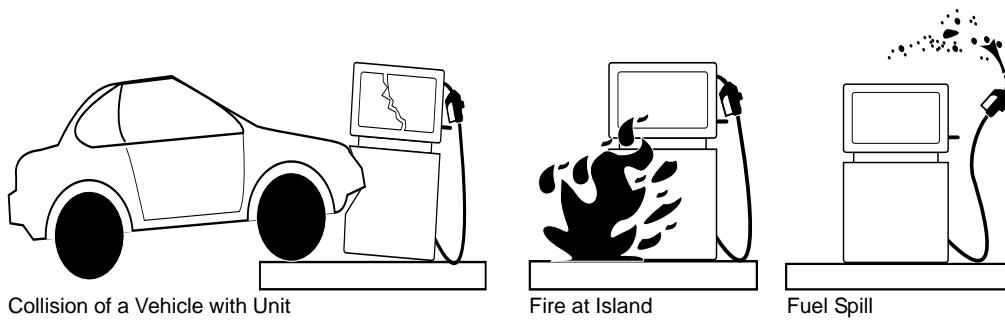
- Do not go near a fuel spill or allow anyone else in the area.
- Use station EMERGENCY CUTOFF immediately. Turn off all system circuit breakers to the island(s).
- Do not use console E-STOP, ALL STOP and PUMP STOP to shut off power. These keys do not remove AC power and do not always stop product flow.
- Take precautions to avoid igniting fuel. Do not allow starting of vehicles in the area. Do not allow open flames, smoking or power tools in the area.
- Do not expose yourself to hazardous conditions such as fire, spilled fuel or exposed wiring.
- Call emergency numbers.

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3 – System Description

PAM 5000 Pump Access Module System Description

The PAM 5000 is the newest addition to the Gilbarco Pump Access Module product line. The PAM 5000 is designed to be fully compatible with the PAM 1000 POS protocol.

The PAM 5000 will support the PAM protocol using different communication speeds (300 - 19200 baud rate) and will support up to 36 fueling positions.

Defaults can be viewed or changed. For more detailed information, refer to the following sections:

The physical connection to the POS is through a DSB 500 Module with selectable inputs for either RS-232, RS-422 or 45 mA Current Loop.

By default, the PAM 5000 runs 16 fueling positions on PAM ports 12 and 13, and 4 fueling positions on port 14 (total 36). This can be changed to 12 fueling positions per port via PAM 5000 menu 2.5 Application Setup, if required.

The physical connection to the dispensers is through a DSB 492 Module (maximum of eight physical devices per module). The system will be configured with necessary 492 Modules based on the site configuration. The system can easily be upgraded to handle extra 492 Modules without any software upgrades, by a simple (if required) setup change from 24 to 36 fueling positions support in the PAM related configuration.

PAM 5000 Hardware Description

The PAM replacement system is based on standard Gilbarco PAM 5000 hardware using the M08037B010, CPB509 main board and DSB Modules. The box may be configured based on customer requirements (number of pumps or fueling points that need to be connected).

Figure 3-1: Base PAM 5000 Box with CPU Board (CPB509), 1 DSB 500 Module, 1 DSB 492 Module, and Ethernet Connection

Note:
PORT 11: POS
PORT 12: Pumps 1 - 16 (default setting)
PORT 13: Pumps 17 - 32 (default setting)
PORT14: Pumps 33 - 36 (default setting)
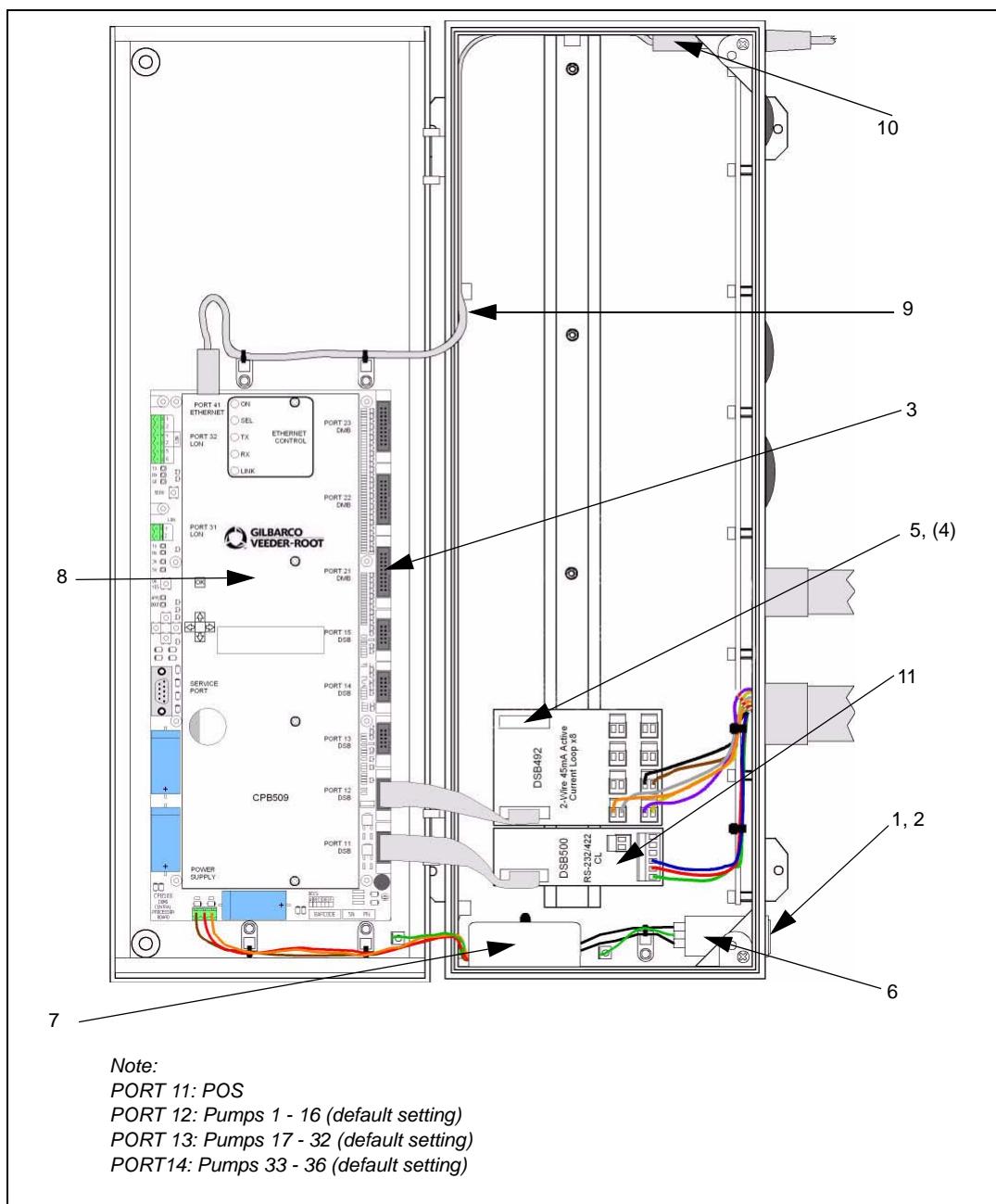
Item	Description	Part Number
1	Fuse, Slow Blow, 5 x 20 mm, 1A, IEC127-2/3	M08037B003
2	Fuse Holder, for insertion in AC Inlet	M08037B004
3	Cable - DSB 500 to CPB to DSB 492	M08037B005
4	DSB cable - 492 to 492	M08037B006
5	DSB cable - DSB 492 to CPB	M08037B007
6	AC Filter without Fuse Holder	M08037B008
7	Power Supply Transformer, 120 V/24 V, 36VA, Toroid	M08037B009
8	Central Processor Board (CPB 509)	M08037B010
9	Internal Ethernet Cable, 25.6 inches (CBL311 type 001)	M08037B011
10	Ethernet Connection Board (DCB 460)	M08037B012
11	RS-232/RS-422 Interface Module (DSB 500) CL Passive	M08037B002S
12	Current Loop Interface Module, 8 connections (DSB 492)	M08037B001S
13	Power Cord, Grounded US plug NEMA 5-15, IEC320, 2 m black	Q11121-02
14	Power Cord without plug for wall end, IEC320, 1.5 m black PVC	Q11736-03
15	PAM to D-Box Cable Adapter*	R19000-02
16	POS to PAM Cable Adapter (RS-232)*	R19000-03
17	POS to CRIND D-Box Cable Adapter or POS to PAM Cable Adapter (RS-422/CL)*	R19000-04
Not shown		

Removing a DSB 492/500 Module from the DIN Rail

To remove a DSB 492/500 module from the DIN rail, proceed as follows:

1 Remove power from the PAM 5000.

2 Open the cover by removing the two screws that hold it in place.

3 Disconnect the cables from the module that you wish to remove.

4 Assuming the Central Processor Board on the lid is on the left hand side of the PAM 5000, grasp the module on the right hand side of the DIN Rail.

5 Apply pressure to the center of the retention mechanism by squeezing the module and firmly tip it away from the DIN Rail.
Note: DSB 492 modules have two retention mechanisms that must be squeezed.

Figure 3-2: Removing a DSB 492/500 Module from the DIN Rail
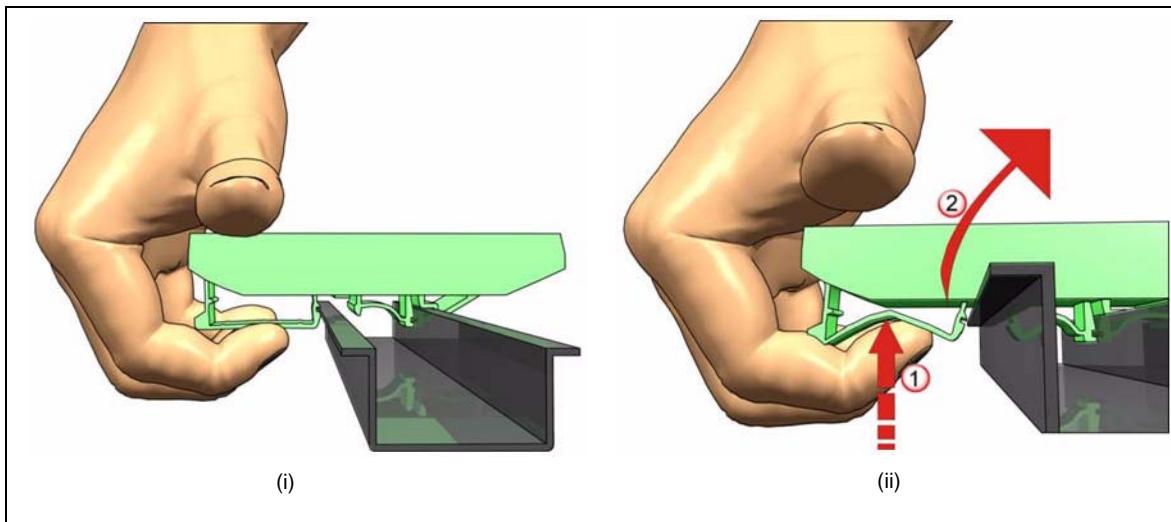
Removing the CPB509 from the PAM 5000

Figure 3-3: Open PAM 5000 Cabinet with Modules Installed
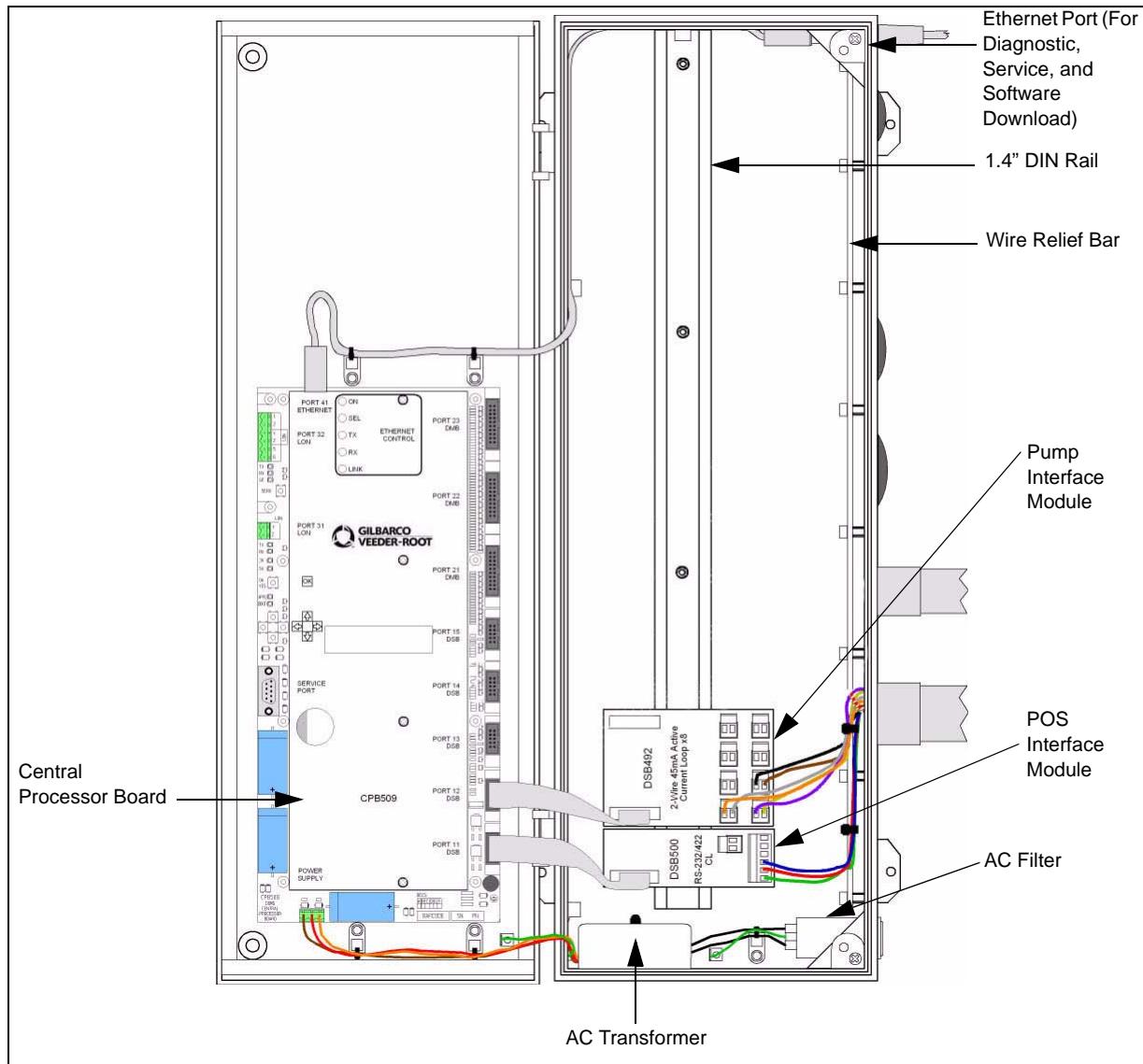
To remove the CPB509 from the PAM 5000, proceed as follows:

1 Disconnect the AC power cord from the PAM 5000.

2 Using a flat head screwdriver, turn the two screws on the top cover of the PAM 5000 counter-clockwise to loosen the cover.

3 Open the top cover.

4 Disconnect the Ethernet cable, power cable, and any modules connected to the main board.

5   Using a Phillips screwdriver, turn the four screws attaching the panel with the Gilbarco Veeder-Root® logo of the main board counter-clockwise to loosen the panel.

6   Using your fingers, gently pry open and remove the panel.

7   Using a 7/32" nut driver, remove the four standoffs that secured the four screws removed in step 5.

8   Using the Phillips screwdriver, turn the eight screws securing the main board counter-clockwise to loosen the main board.

9   Remove the main board.

10 For installation of a replacement main board, perform the steps above in the reverse order.

POS Connection

The hardware module for connecting the POS using PAM POS protocol is standard DSB 500 (RS-232, RS-422 or Current Loop). The POS communication speed is between 300 and 19200 baud rate (default 4800). Select the baud rate using the PAM 5000 menu 2.1. For more information, refer to "Protocol to Port Assignment (Menu 2.1)" on page A-28.

Figure 3-4: POS Connection
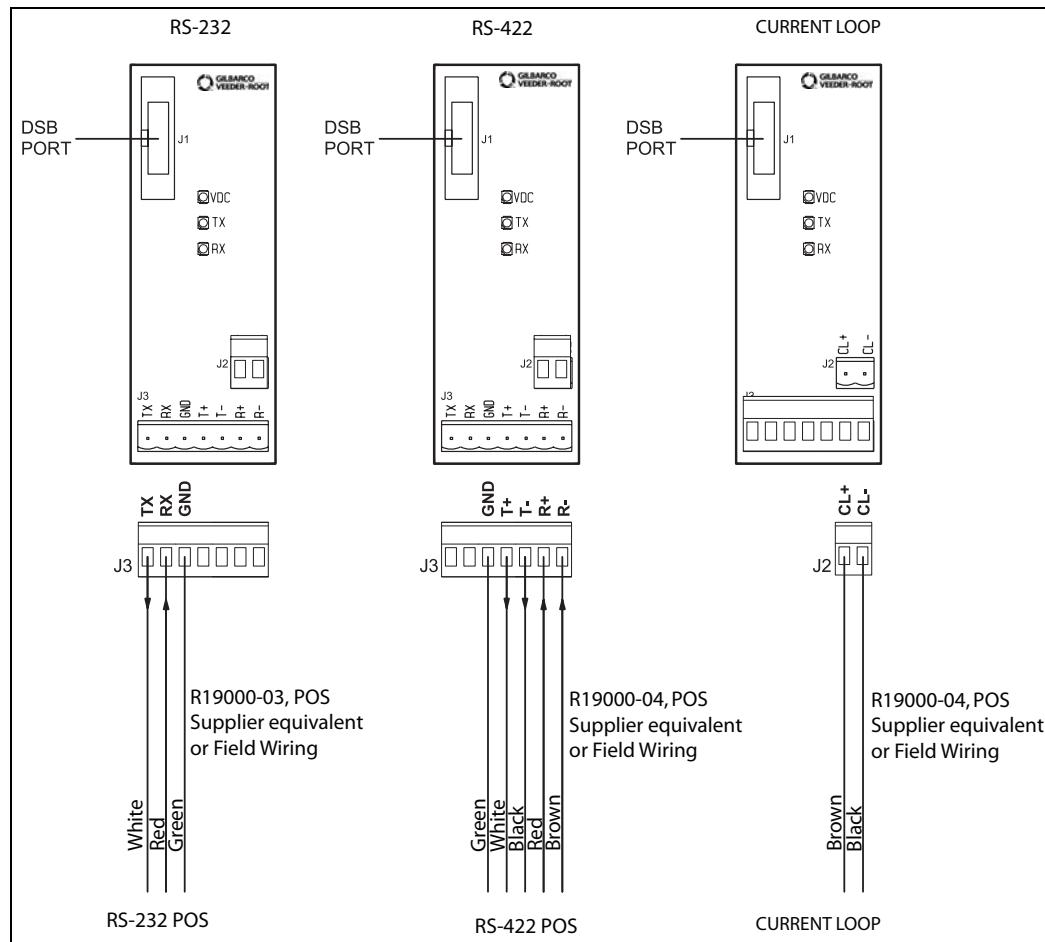
Pump Connection

The hardware interface for connecting pumps is Current Loop 45 mA. A DSB 492 Module is used with connections for up to a maximum of eight dispensers. If each connection is to dual sided dispensers, a total of 16 dispensers can be controlled by one DSB 492 Module. Up to 16 dispensers can be controlled per port by PAM 5000, depending on the setup.

Figure 3-5: Pump Connection
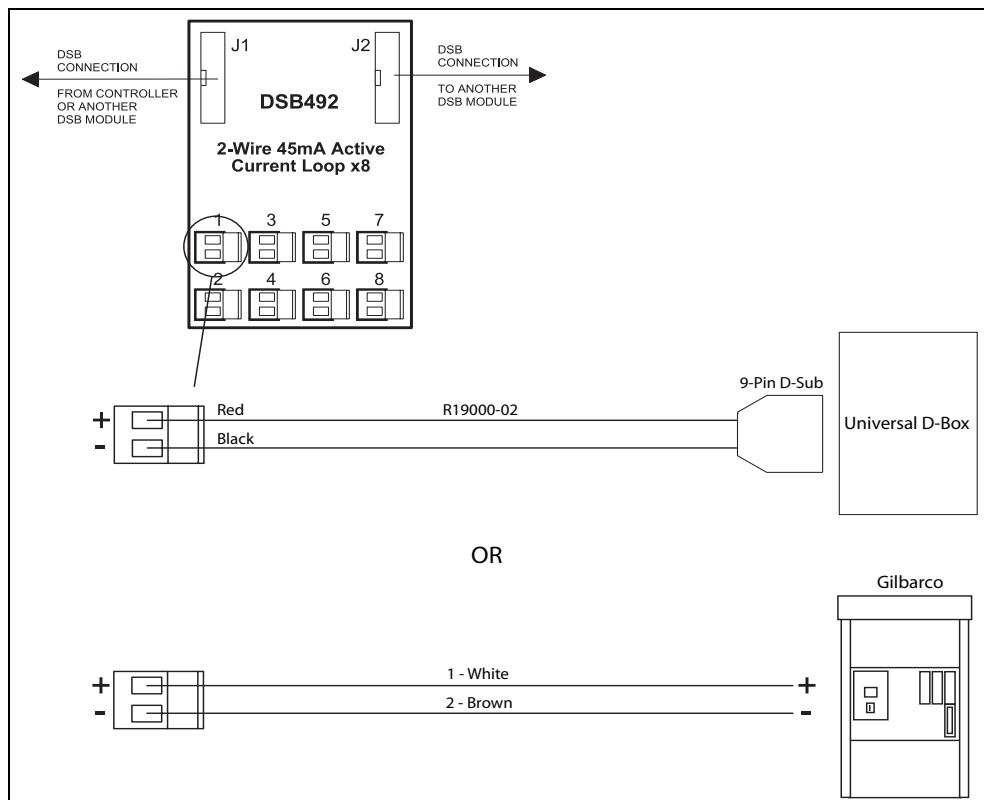
CRIND Kit (Optional)

The CRIND kit M08037B002 is available and can be added into the PAM 5000 cabinet. It provides an interface between the POS and payment terminals.

The DSB 500 with selectable RS-232/RS-422 or Current Loop passive interfaces with the POS and interconnects to the DSB 492 module, which supports Current Loop connections for up to 8 CRIND devices (16 Dual sided). This kit consists of M08037B002S DSB 500 (1), M08037B001S DSB 492 (1), and associated cabling for power and interconnecting modules.

Power to the CRIND kit modules is supplied from an unused port on PAM 5000 Central Processor Board (CPB509), and it operates as a separated direct communication line between POS and CRIND devices.

Figure 3-6: Base PAM 5000 with Pump and CRIND Kit Combination Example
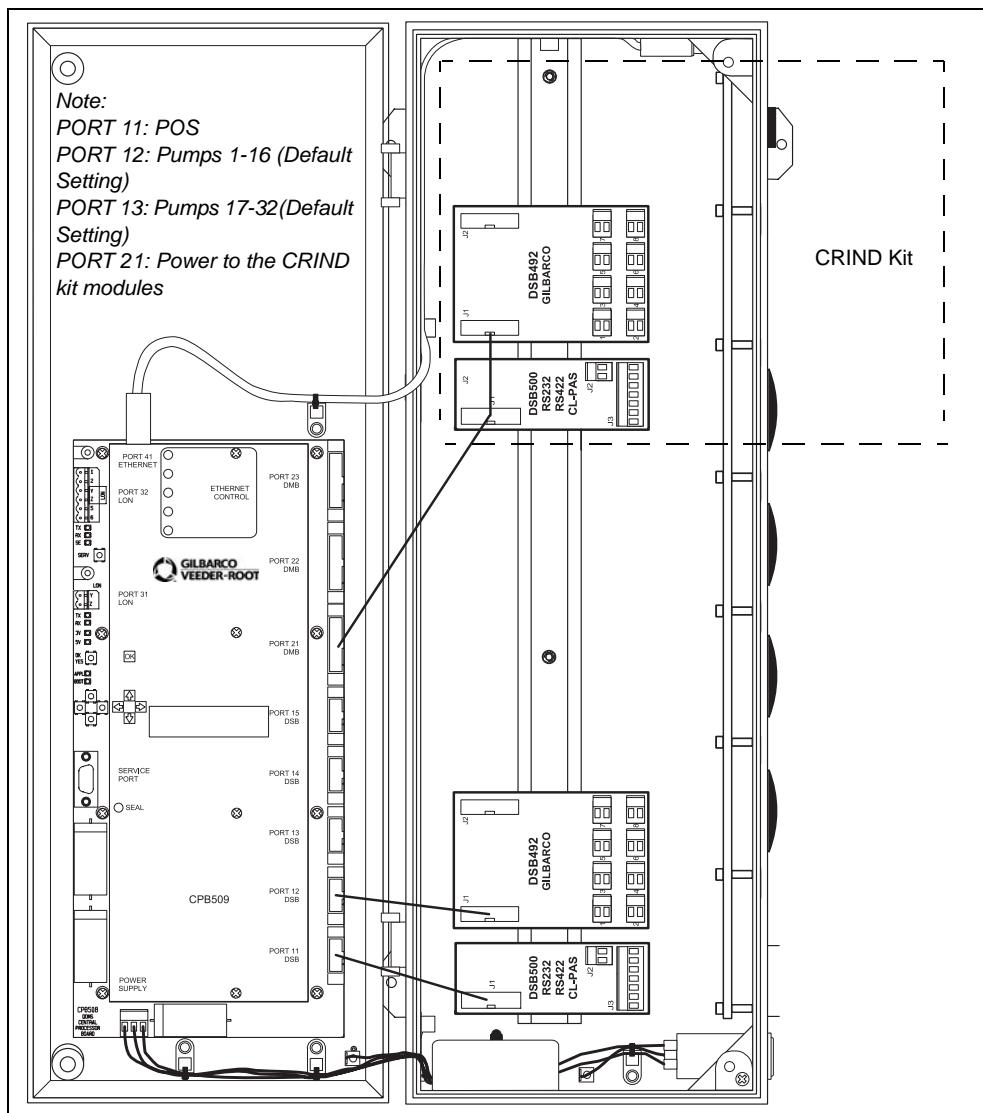
Figure 3-7: PAM 5000 with Pump, CRIND Kit and Current Loop Expansion Kit Combination Example
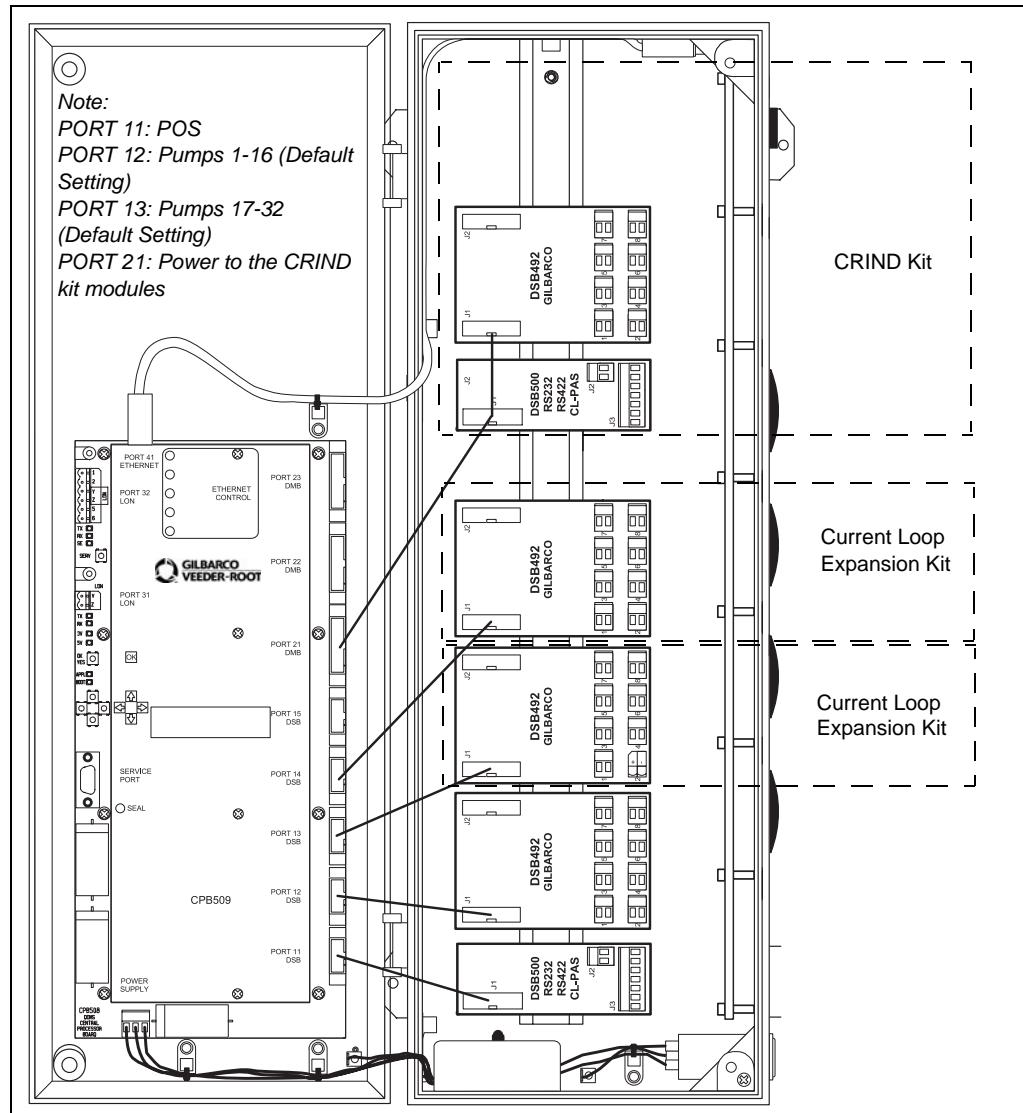
Current Loop Expansion Kit (Optional)

The Current Loop Expansion kit M08037B001 is available and can be added into the PAM 5000 cabinet. It provides an interface between the PAM and the dispensers.

Each kit contains a DSB 492 Module which supports Current Loop connections for up to 8 CRIND or Pump devices (16 Dual Sided). The kit is also supplied with both a ribbon cable for connection to the CPB509 for Pump devices, as well as a cable for connection to the DSB 492 for CRINDs.

Changing a Blown Fuse

The fuse is located in the AC inlet socket. To change a defective fuse, proceed as follows:

1 Shut off power by unplugging the AC.

2 Open the Fuse Drawer with a small flat screwdriver (max 2.5 mm) by inserting the tip into the small hole next to the Fuse Drawer, as shown in Figure 3-8.

Figure 3-8: Opening the Fuse Drawer
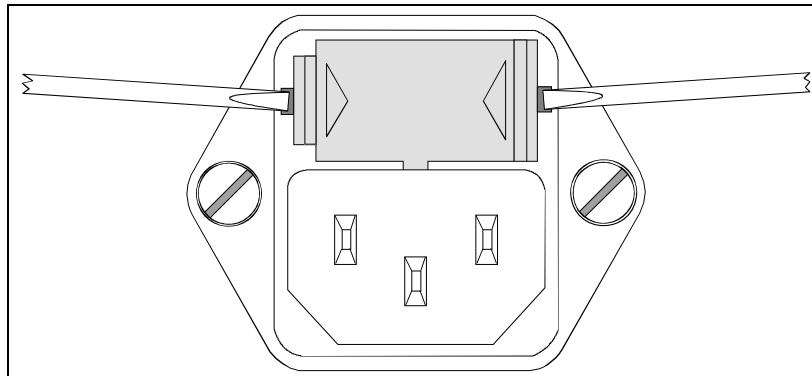
3 Press the handle of the screwdriver carefully towards the box, so that the Fuse Drawer is pushed in the direction of the arrow and out.

4 Repeat steps 2 and 3 for the other side of the Fuse Drawer.

5 Remove the defective fuse from the Fuse Drawer and replace the fuse.

Notes:1) The Fuse Drawer is divided into two sections, to make room for a spare fuse. Use the spare fuse, if available. Ensure that it is a type T1A fuse of dimensions 5 X 20 mm.

2) Ensure that you detect the reason for the blown fuse and eliminate the problem.

6 Close the Fuse Drawer.

Restore power. The system should run normally.

PAM 5000 Software

Web Server

The PAM 5000 has an embedded Web Server that allows connection via a standard browser for installation and service or application specific services. It supports Microsoft Internet Explorer (version IE 5.0 and higher) and Mozilla Firefox (version 1.0 or higher) browsers. Some features such as the Embedded Peep Applet (communication trace tool) or Software Upload Applet require support for Java® (version 1.4 or higher).

To access the PAM 5000 web server via an Internet browser, type the PAM IP address in the browser's address bar:

http://10.10.10.100 (default)

For information regarding Web Server logon, refer to "Web Service Page Logon" on page A-22. For information on Username and Password, refer to "Password (Menu 2.4.1)" on page A-44.

FTP Server

An FTP Client can be used to connect to the PAM 5000 to view the file directory structure and read files. A browser can collect files via FTP and view them directly. When PAM 5000 is prepared for software upload, the FTP browser can also upload a new program version to the PAM 5000 using the Copy/Paste functionality.

To access the PAM 5000 via an Internet browser, type the following in the browser's address bar:

ftp://[PAM user]:[PAM password]@[PAM IP address]

Figure 3-9: PAM 5000 File System, Root Directory
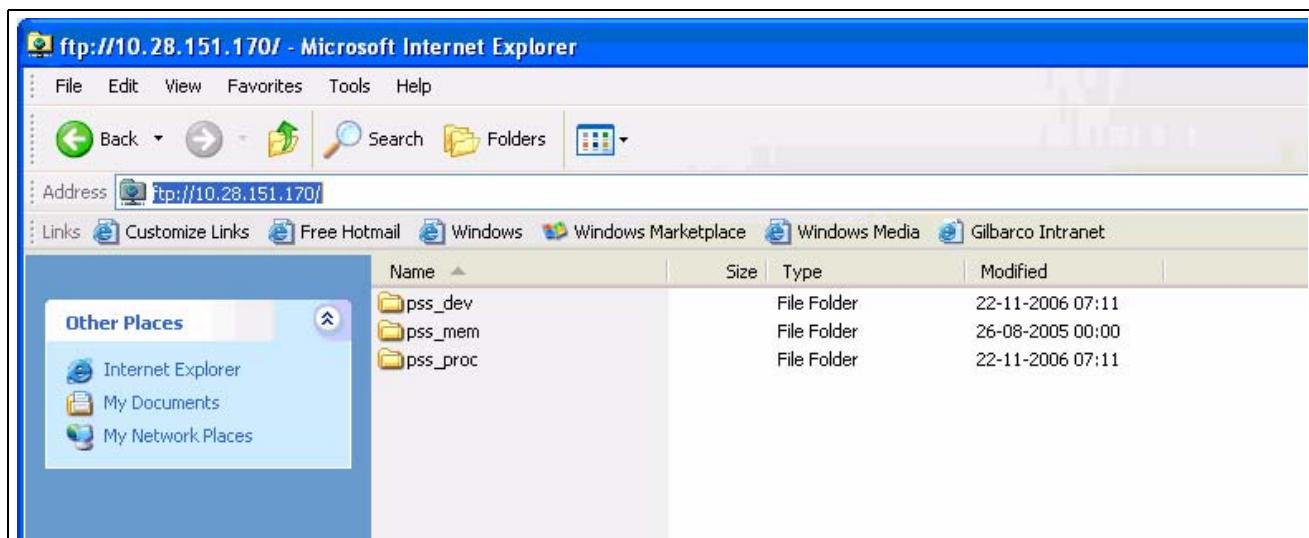
Network Connection

To set up the PAM 5000 network, consult with the Network Administrator. He or she will know the network parameters (IP address, subnet mask and default gateway) that need to be set in the PAM 5000. In this respect, the PAM 5000 is no different from other network devices.

For information on how to set PAM 5000 IP, Subnet, and Gateway addresses, refer to "Installation (Menu 2)" on page A-27, "Communication Setup (Menu 2.3)" on page A-37, and "TCP/IP Parameters (Menu 2.3.1)" on page A-37.

To connect to and configure your PC, refer to "Appendix A: Web Service Connection" on page A-1.

4 – Configuration and Service

Web and Local Service Panel

Local Service Panel Devices

The Local Service Panel is a 2 X 16 character LCD display and five push buttons called <UP>, <DOWN>, <LEFT>, <RIGHT> and <OK>.

Figure 4-1: Local Service Panel Devices
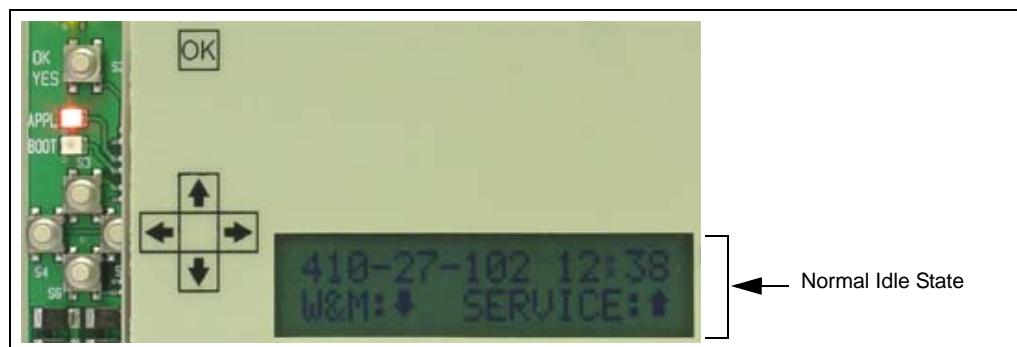
The <UP> and <DOWN> buttons are also used for incrementing and decrementing parameter values in some menus.

The <OK> button is used for entering the selected value, for confirmation and in a few cases, to exit a menu.

The PAM 5000 will, in idle state, normally show the running program version (BOOT or Application) plus date and time with a blinking colon (:).

Application LEDs

The CPB509 Board has two LEDs marked BOOT (Boot Program) and APPL (Application program). They are used to indicate program status as described below:

BOOT LED	APPL LED	Description
BLINK	OFF	BOOT running. Blink rate according to the current load
OFF	BLINK	APPL running. Blink rate according to the current load
ON		Super Master Reset in progress
FLASHING	OFF	Master Reset in progress (BOOT)
OFF	FLASHING	Master Reset in progress (APPL)
ON	OFF	Reset in progress

BOOT LED	APPL LED	Description
ON	ON	Erasing the FLASH (BOOT)
ON/OFF	OFF/ON	Programming the FLASH (APPL)
OFF	ON	APPL program stopped/Error state
ALTERING ON/OFF	ALTERING ON/OFF	Program uploading. Indicate that a program is being uploaded

Figure 4-2: Local Service Panel and LEDs

Normal Idle State
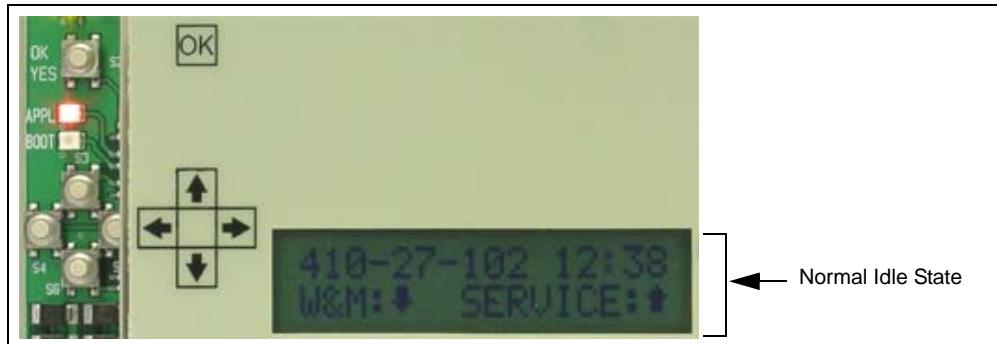
Web Service Page Logon

When accessing the Web Service pages, a User Name and Password is required. For more details, refer to "Password (Menu 2.4.1)" on .

To access the PAM 5000 Web Server using an Internet browser, proceed as follows:

1   Enter the PAM IP address in the browser's address bar:
    http://10.10.10.100 (default)

2 Enter the required User name and Password and click **OK**. Refer to "Password (Menu 2.4.1)" on page 44 for details.

The defaults are:
   • User name: admin
   • Password: password

Figure 4-3: Accessing Web Service Page

The start-up screen for the Web Service Page displays some essential information beside the navigation menu, such as:
- Site ID/System Name (default is Board Serial Number)
- Application Software version

Figure 4-4: PAM 5000 Web Start Page (Welcome to PAM 5000)
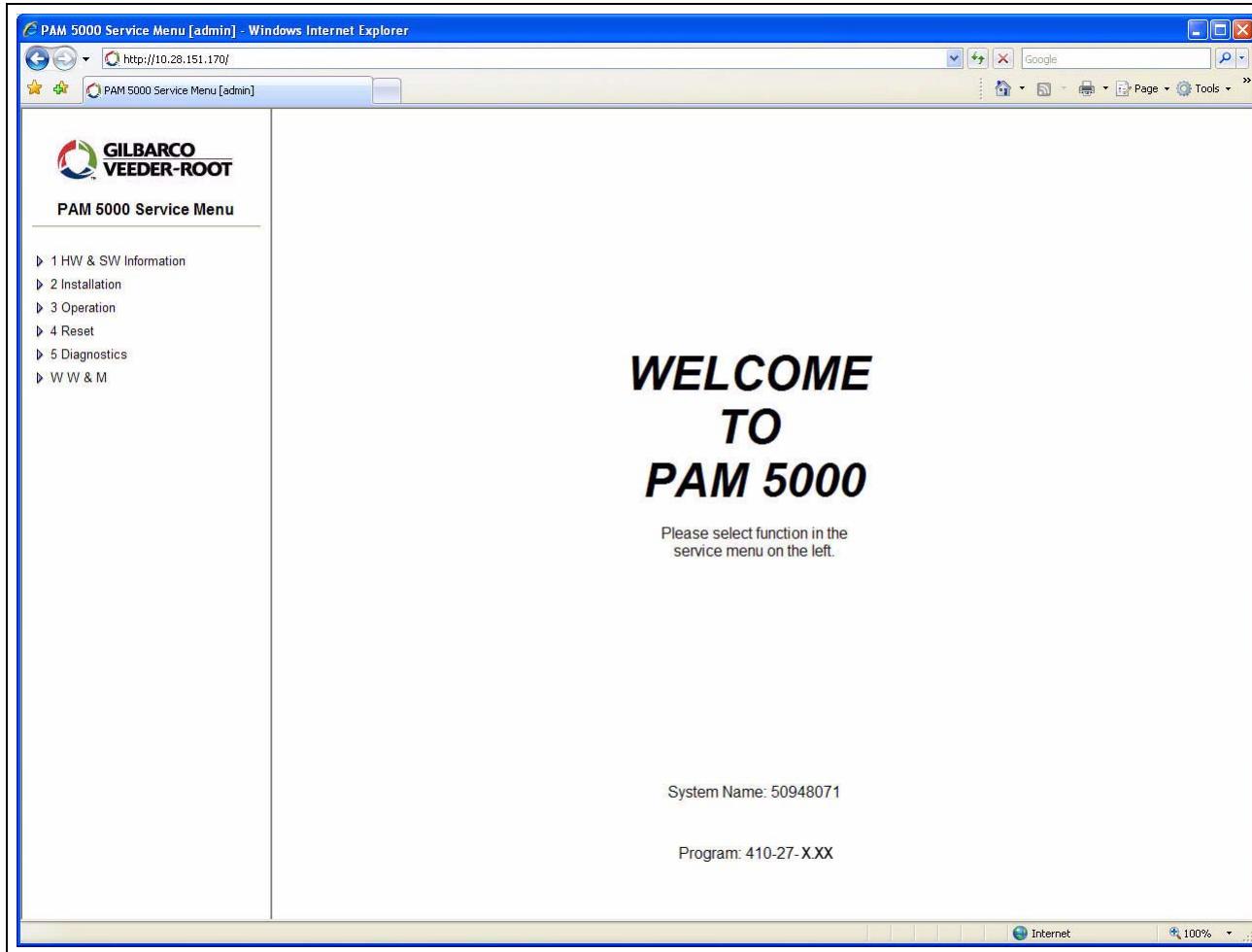
IMPORTANT INFORMATION

Perform a Master Reset before proceeding. For instructions on how to perform a Master Reset, refer to "Master Reset (Menu 4.2)" on page 73.

HW and SW Information

Note: Only pertinent menu options are explained.

Program Versions (Menu 1.1)

The version information of the PAM 5000 software components (BOOT and Application) is found in menu 1.1.

Figure 4-5: Web Page (Menu 1.1) Program versions
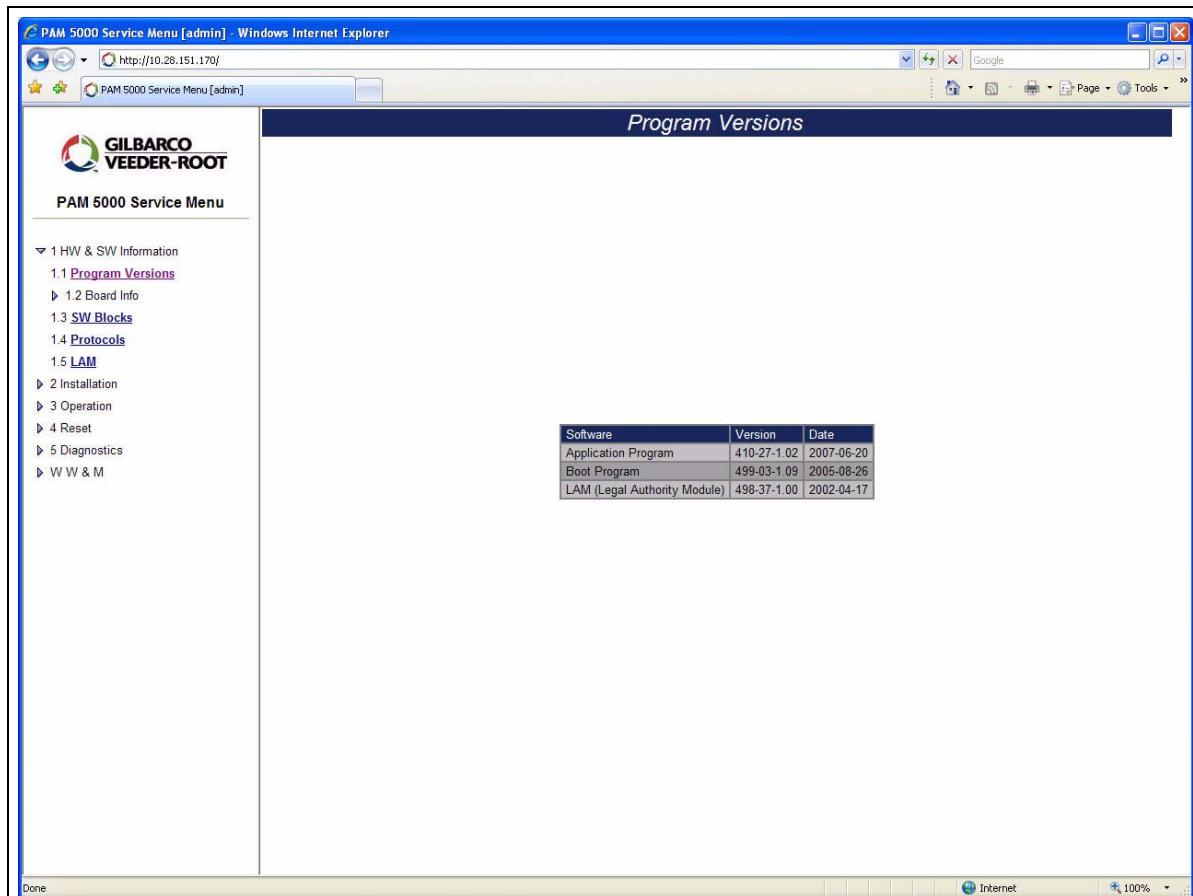
To read the program versions of the software components on the Local Service Panel, navigate to menu 1.1 and press the <**RIGHT**> button.
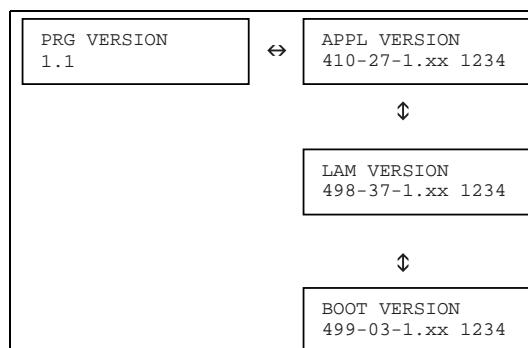
Use <UP> and <DOWN> to scroll through the different software components.

The program version information is also available in the following files in the PAM Virtual File System:
- Boot Info: **/pss_proc/sys/boot_inf.txt**
- Legal Authority Module Info: **/pss_proc/sys/lam_inf.txt**
- Application Info: **/pss_proc/sys/appl_inf.txt**

Protocols (Menu 1.4)

Contains the baud rates that are supported in the Application program. It can be used for Protocol to Port assignment (Menu 2.1).

Figure 4-6: Web Page (Menu 1.4) Supported Protocols for Assignment

Installation (Menu 2)

Protocol to Port Assignment (Menu 2.1)

The PAM 5000 application is equipped with PAM POS and Gilbarco Two-wire pump protocol. Different baud rates can be selected via the Protocol to Port Assignment (Menu 2.1).

Figure 4-7: Protocol to Port Assignment

The default PAM POS baud rate is 4800.

Default port to POS FP link:

Port 12	FP 1 - 16 on POS
Port 13	FP 17 - 32 on POS
Port 14	FP 33 - 36 on POS

An alternative port to POS FP link (backward compatible with PAM 1000) can be set through Application Setup menu 2.5:

Port 12	FP 1 - 12 on POS
Port 13	FP 13 - 24 on POS
Port 14	FP 25 - 36 on POS

Note: *If one Gilbarco two-wire port assignment is changed/removed, it will always be the **port with the lowest number** which will be linked to the **first 12 Fueling Points**.*

Unless PAM 5000 is replacing a previously installed PAM 1000, there is no need to change the Gilbarco Two-wire Protocol assignment, even when the PAM 5000 is only controlling a few pumps. Performance wise, it will have no impact on the communication (PAM 5000 port 12 corresponds to PAM 1000 loop 1, PAM 5000 port 13 to loop 2 and PAM 5000 port 14 to loop 3).

Only one port can be assigned to PAM POS Protocol.

Protocol to Port Assignment (Menu 2.1)

The web page for modifying Protocol to Port assignments is shown in Figure 4-8.

Figure 4-8: Web Page (Menu 2.1) Protocol to Port Assignment with Factory Settings
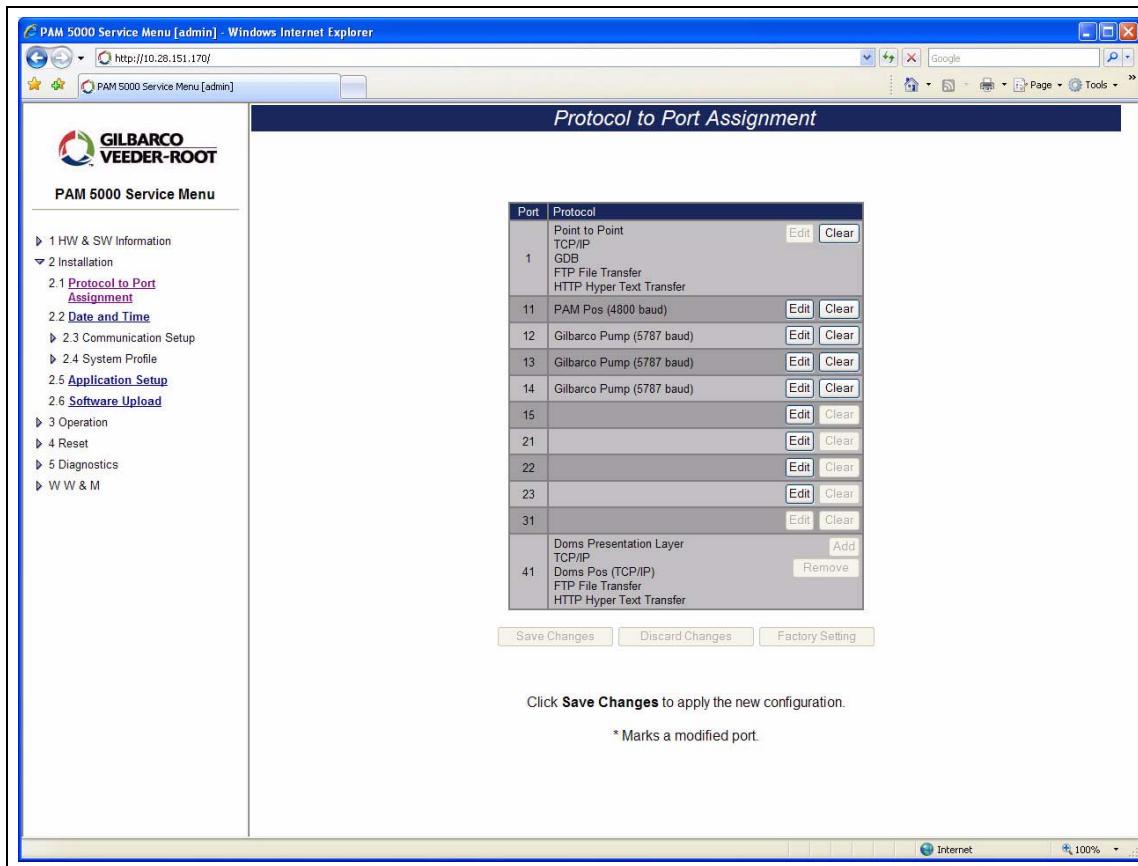
The table below provides an overview of the current protocol to port assignments.

Parameter	Function
Edit	Creates a new/edits an existing protocol assignment
Clear	Deletes all protocols assigned to a given port
Save Changes	Saves and applies changes for all ports
Discard Changes	Cancels all changes done since last Save
Factory Setting	Restores all Protocol to Port assignments to their original values (Default Port assignment)

Note: Viewing or changing the Protocol to Port assignments from the Local Service Panel is not supported.

Configure Protocol Assignment

To change the protocol to port assignment, click **Edit** for the desired port. A four step configuration procedure is explained below.

Step 1 - Select Protocol Type

Select the desired protocol type in the drop down list. POS or Pump can be selected. The device type "Other Device Type" and POS selection "Gilbarco POS" can be selected, but is not used in the PAM Replacement Application 410-27-1xx.

Figure 4-9: Step 1 - Select Protocol Type
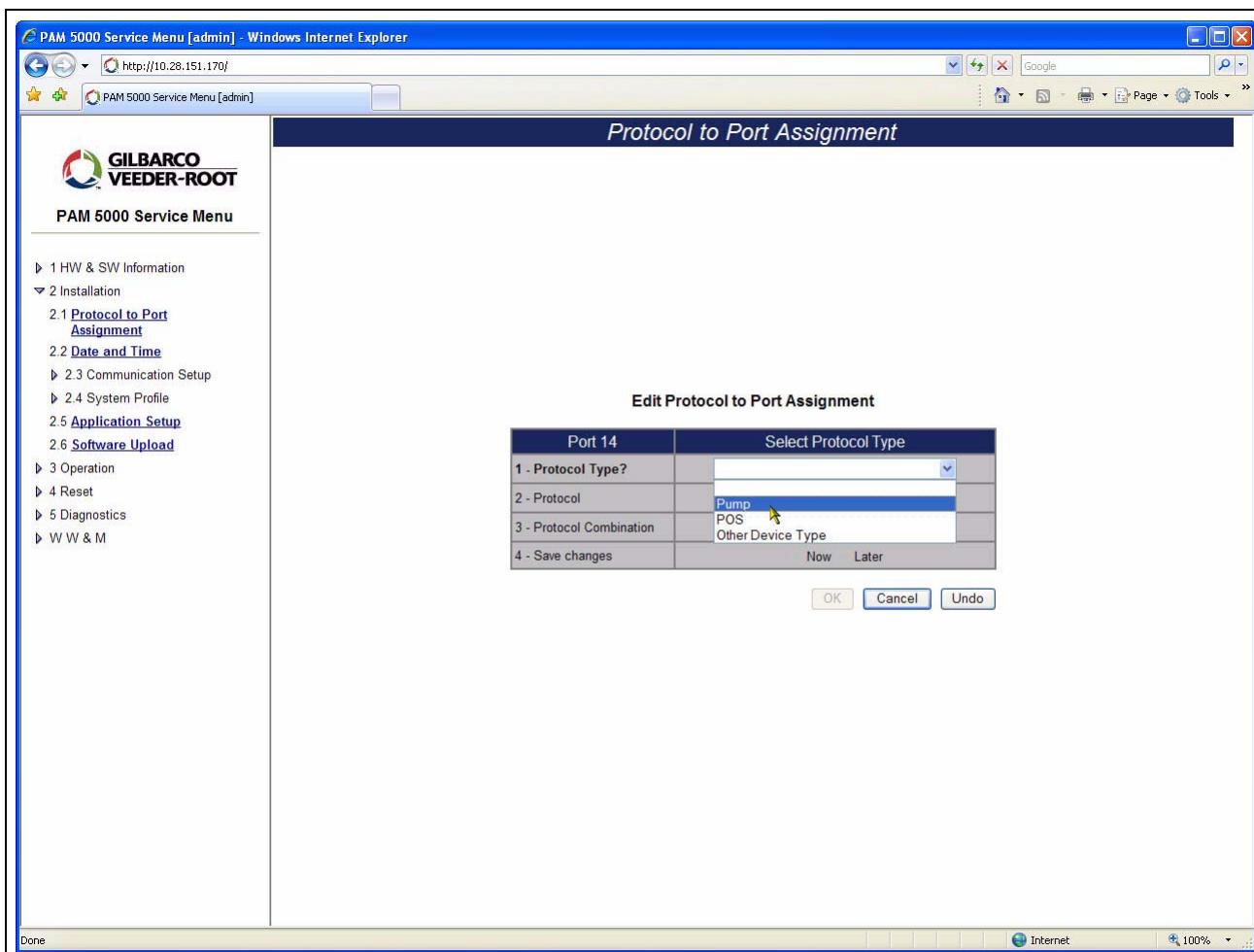
Note: It is only possible to have three ports configured for pumps.

Step 2 - Select Protocol

For the selected protocol type, select a protocol or click **Undo** to go back to "Step 1 - Select Protocol Type" on page 29. The drop down list only contains the protocols available.

Figure 4-10: Step 2 - Select Protocol
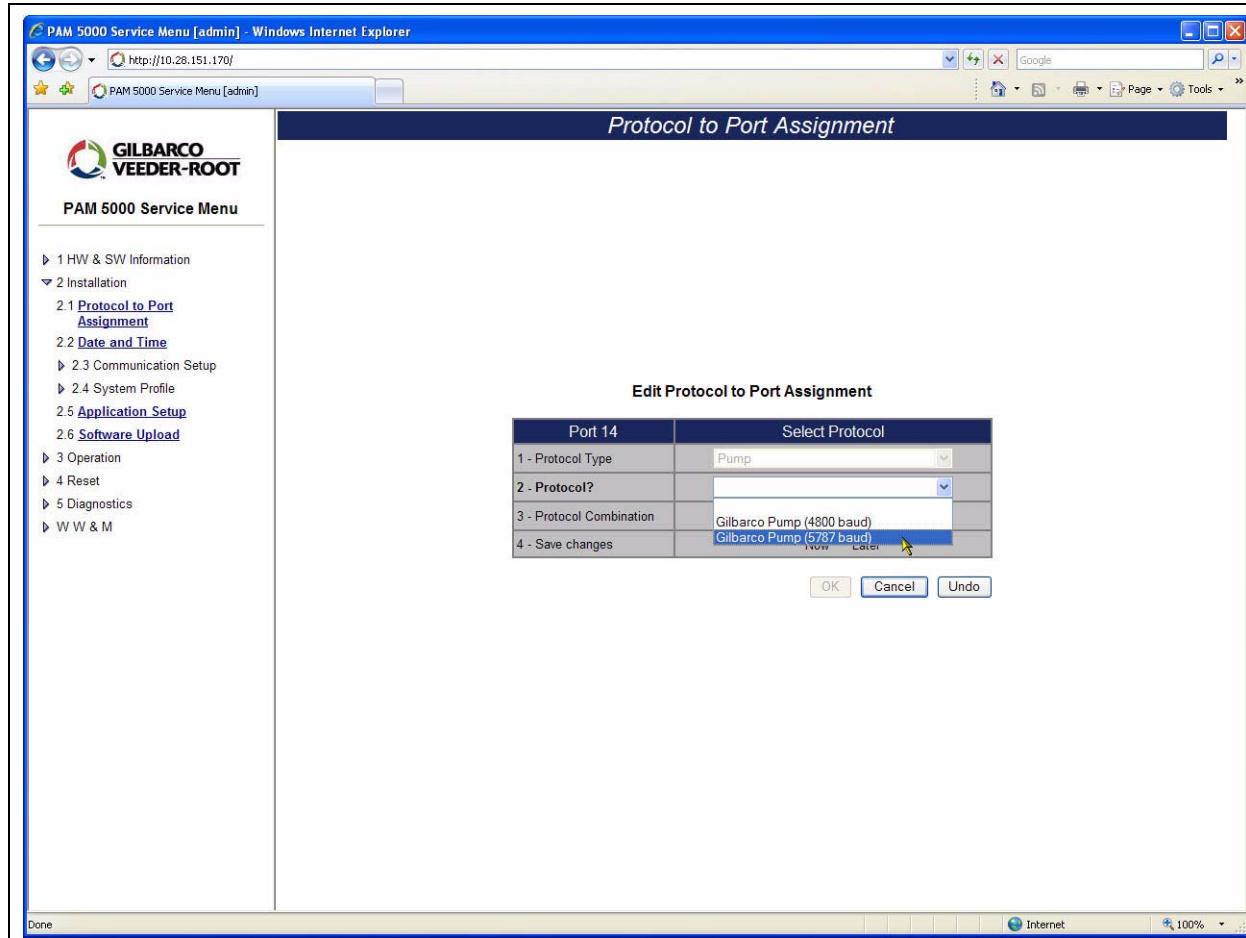
Step 3 - Select Protocol Combinations

For the selected protocol, select the protocol combination in the drop down list or click **Undo** to go back to "Step 2 - Select Protocol" on page 30.

There is no Protocol Combination in the PAM POS or Gilbarco pump protocol selection.

Figure 4-11: Select Protocol Combination
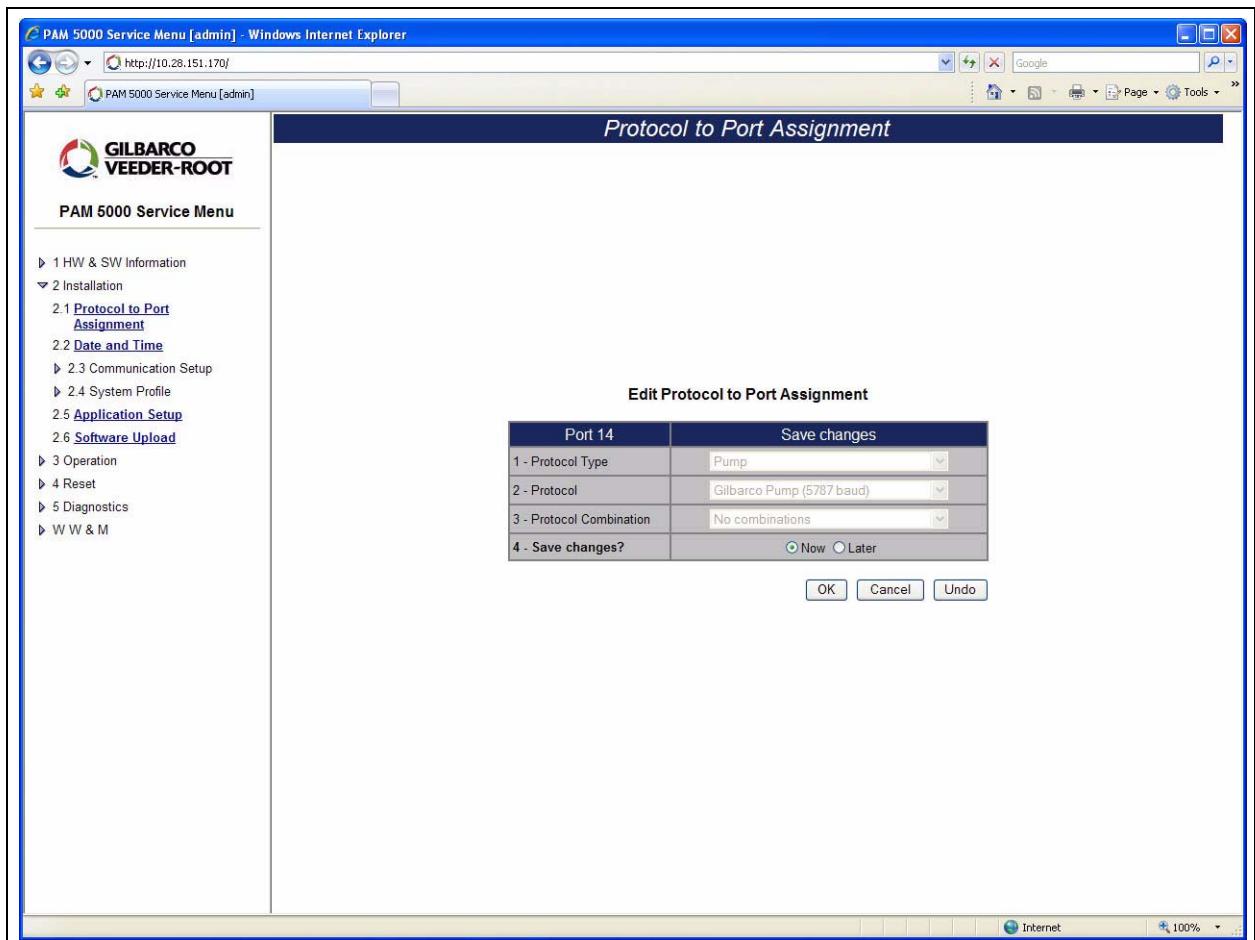
Step 4 - Save changes now or later

Select either **Now** to finish Protocol to Port Assignment or **Later** to configure more ports. If **Later** is selected, use the **Save Changes** button on the overview page (see Figure 4-14 on page 33) to save the new Port configuration.

Click **OK** to complete configuration of this port or click **Undo** to go back to "Step 3 - Select Protocol Combinations" on page 30.

Figure 4-12: Step 4 - Save Changes Now or Later
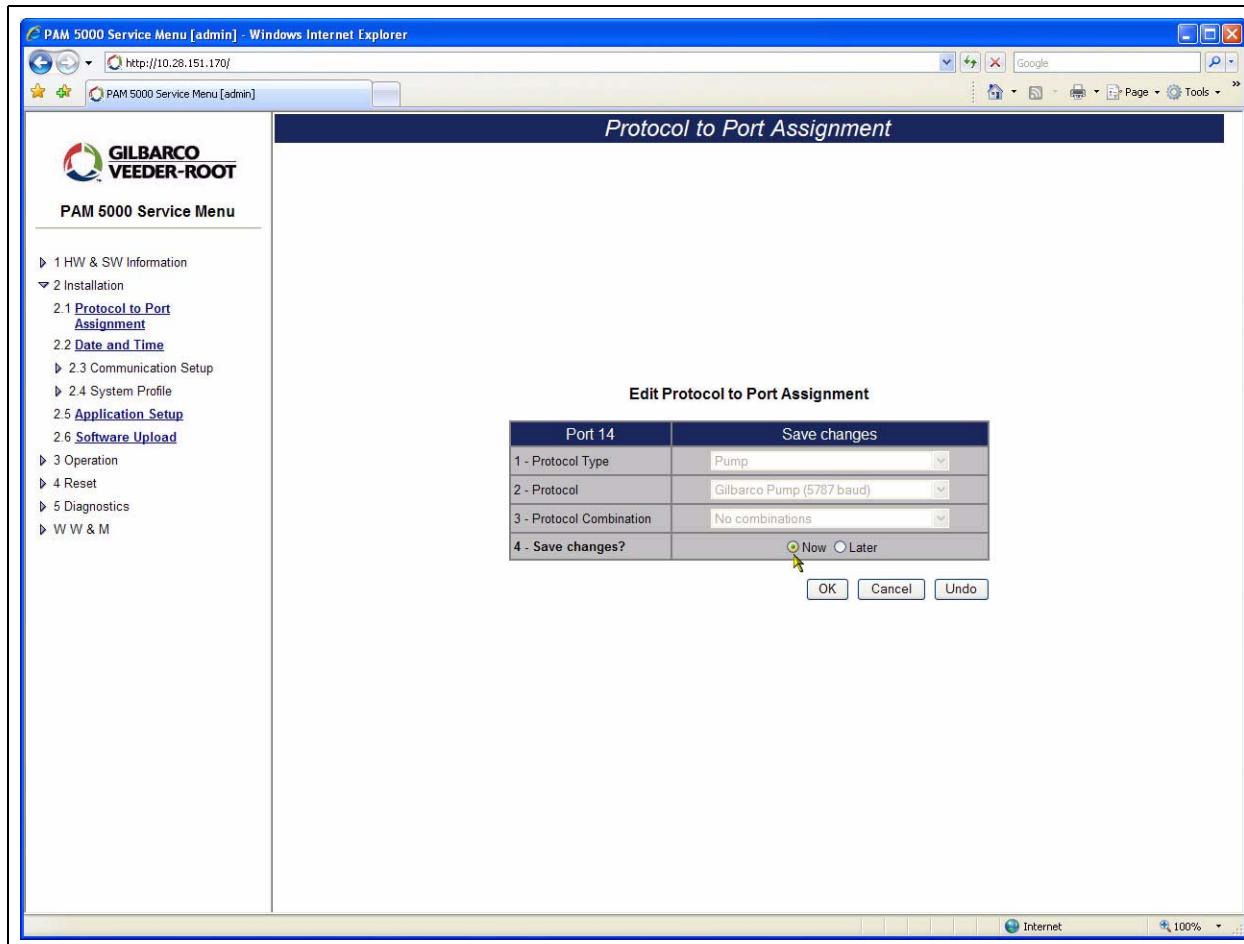
If you select **Now** and click **OK**:

The new Protocol assignments will be activated after a Master Reset.

Note: All pump configuration and unpaid transactions will be cleared at Master Reset.

Figure 4-13: Edit Protocol to Port Assignment - Selecting Now

If **Later** is selected, a "*" appears, indicating a change that is yet to be effectuated.

Continue with Protocol to Port assignment for another port (repeat "Step 1 - Select Protocol Type" on page 29 to "Step 4 - Save changes now or later" on page 31), save the changes, or discard all your changes since the last save.

Figure 4-14: Protocol to Port Assignment with Port 14 modified
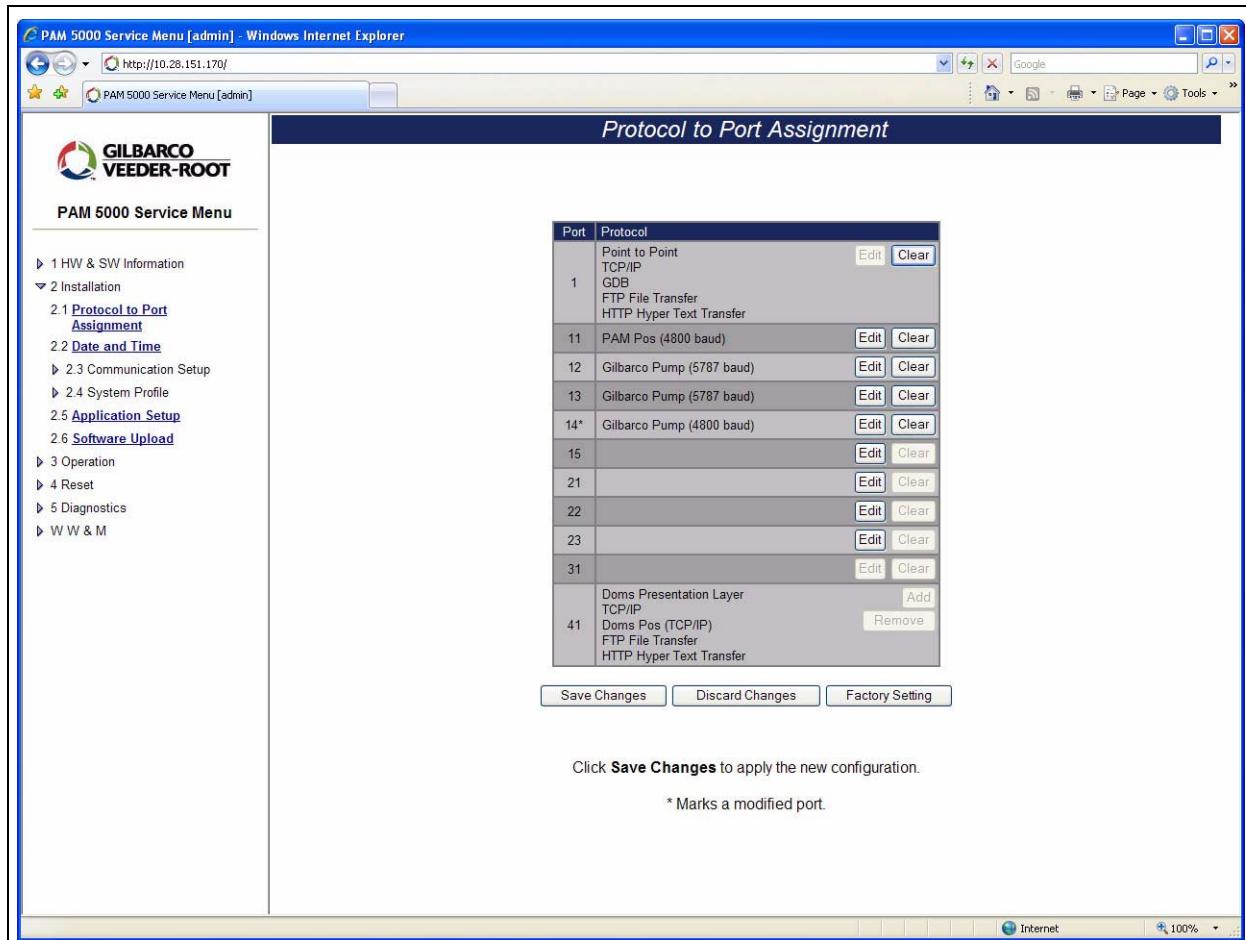
If **Save Changes** is selected, the new Protocol assignments will be activated after a Master Reset.

Note: All pump configuration and unpaid transactions will be cleared at Master Reset.

Figure 4-15: Edit Protocol to Port Assignment - Selecting Save Changes
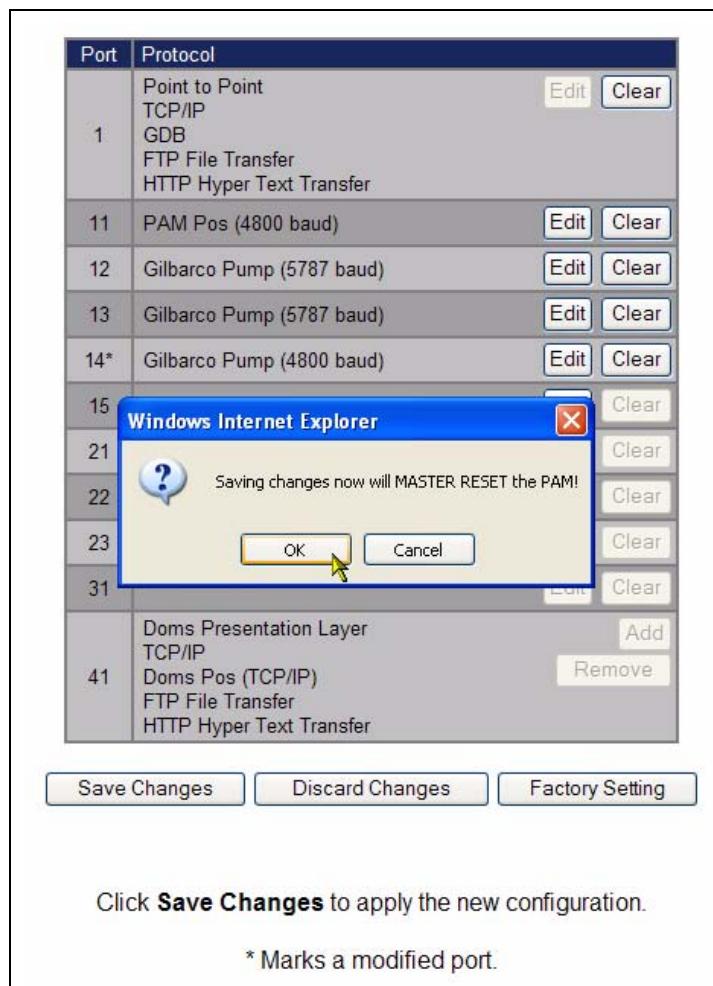
Date and Time (Menu 2.2)

The PAM 5000 has its own Real Time Clock (RTC), which is used to time-stamp various events such as Transactions and Fueling Point errors.

The RTC setting can be changed via the Web, the Local Service Panel (menu 2.2) and in some applications, also via the POS Protocol.

Figure 4-16: Web Page (Menu 2.2) Page to Set the RTC
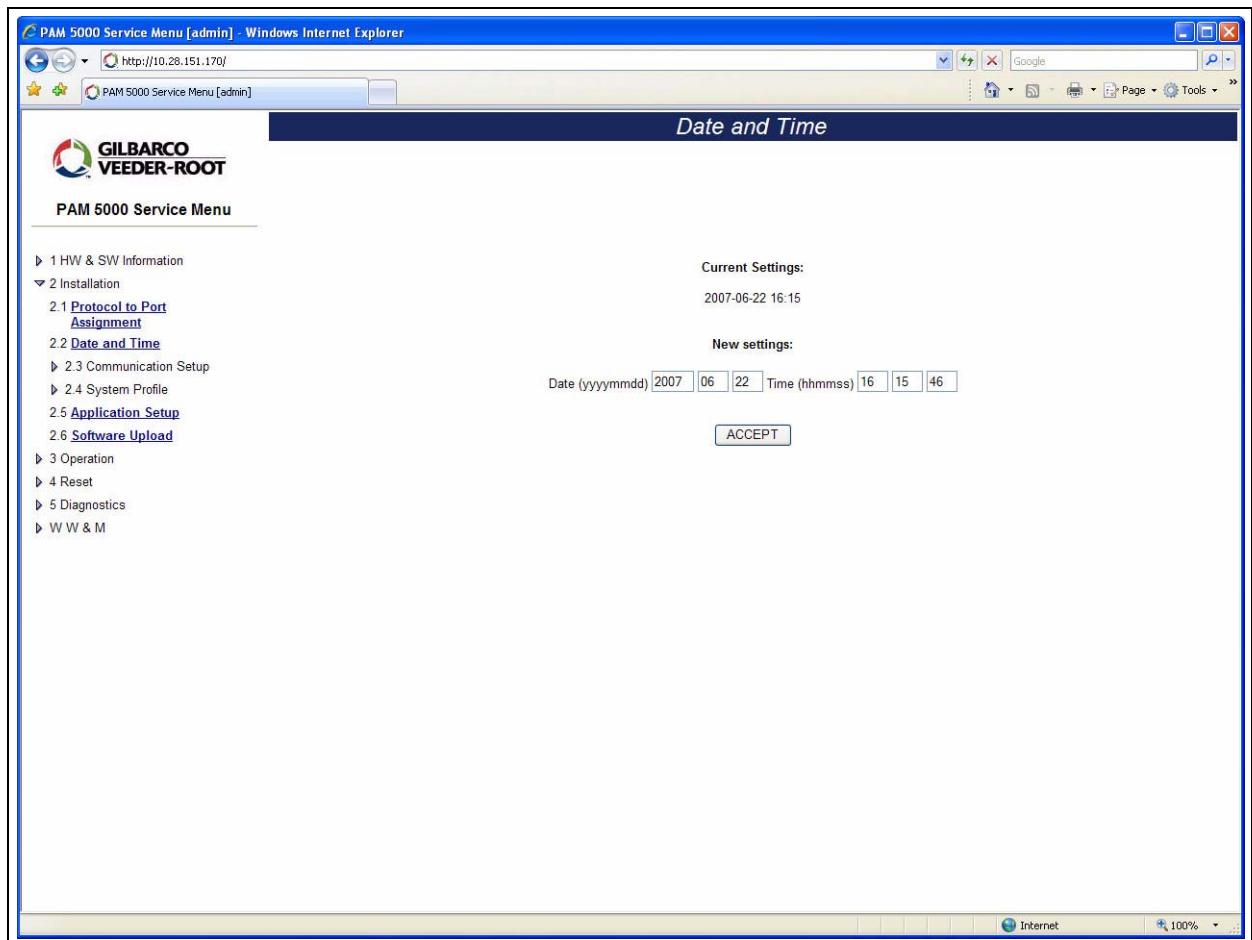
Figure 4-17: Page Confirming the RTC Setting
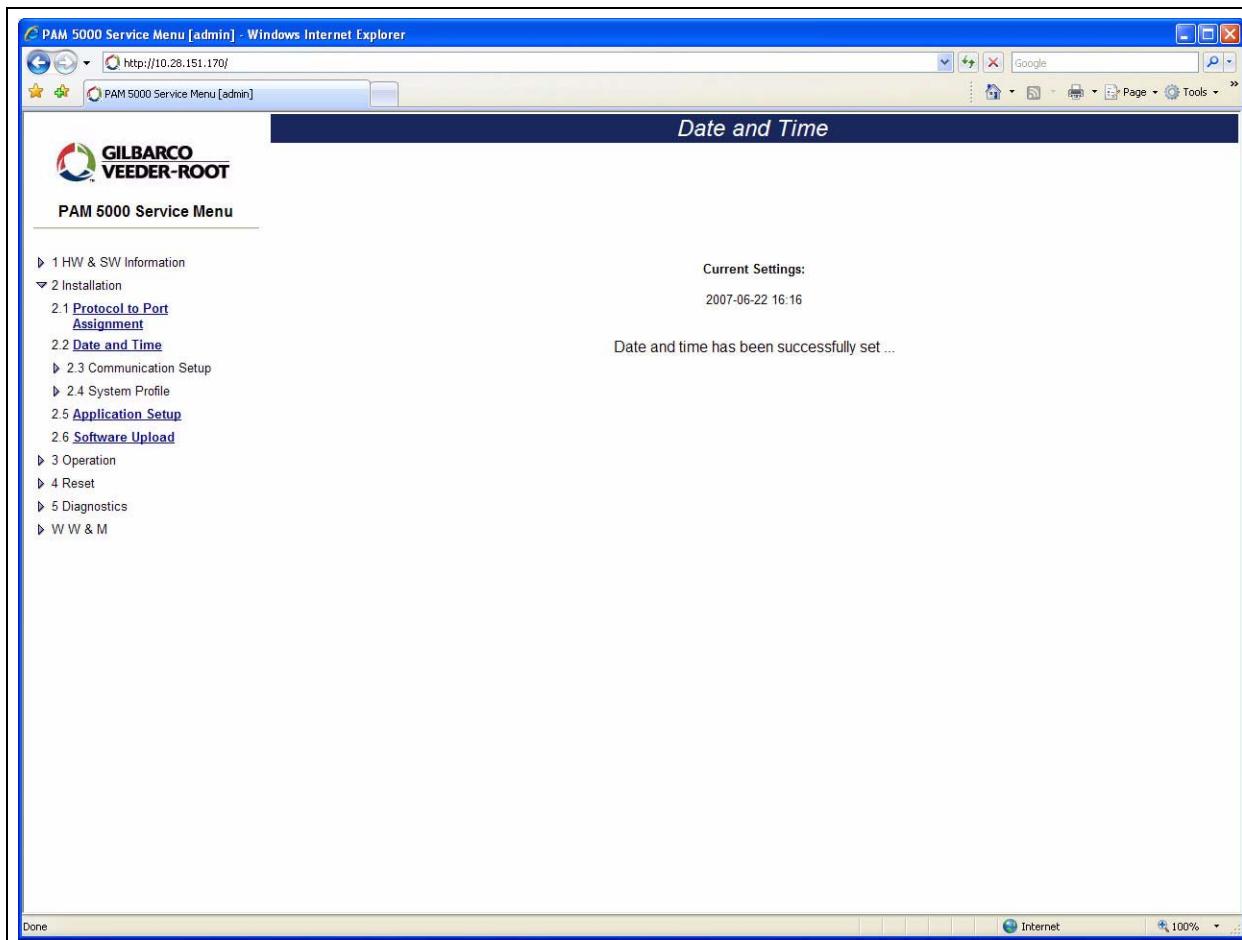
To change the date and time using the Local Service Panel, go to menu 2.2 and use the <RIGHT> button to step through the parameters (year, month, day, hour and minute) and change the values using the <UP> and <DOWN> buttons.

```
┌─────────────────────┐      ┌─────────────────────┐
│ DATE & TIME         │  ↔   │ SET DATE & TIME     │
│ 2.2                 │      │ 2007-06-22 16:16    │
└─────────────────────┘      └─────────────────────┘
```

Finally, press <**OK**> or enter the new date and time.

```
┌─────────────────────┐      ┌─────────────────────┐
│ DATE & TIME         │  →   │ DATE & TIME         │
│ SET OK              │      │ 2.2                 │
└─────────────────────┘      └─────────────────────┘
```
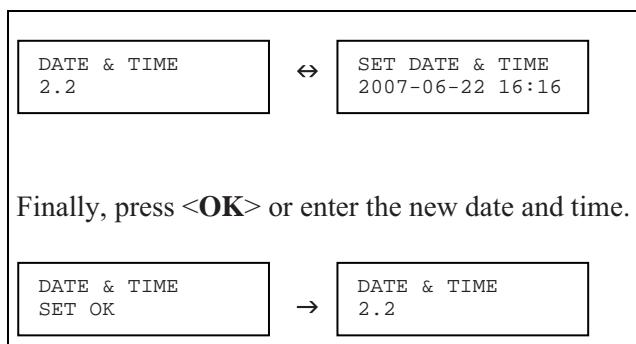
Communication Setup (Menu 2.3)

TCP/IP Parameters (Menu 2.3.1)

Configuration of TCP/IP parameters must be done in accordance with the IP address plan for the location. Consult your Network Administrator regarding this subject, in order to avoid conflicts with other network devices.

The web page for setup of TCP/IP parameters is shown in Figure 4-18.

Figure 4-18: Web Page (Menu 2.3.1) TCP/IP Setup Page
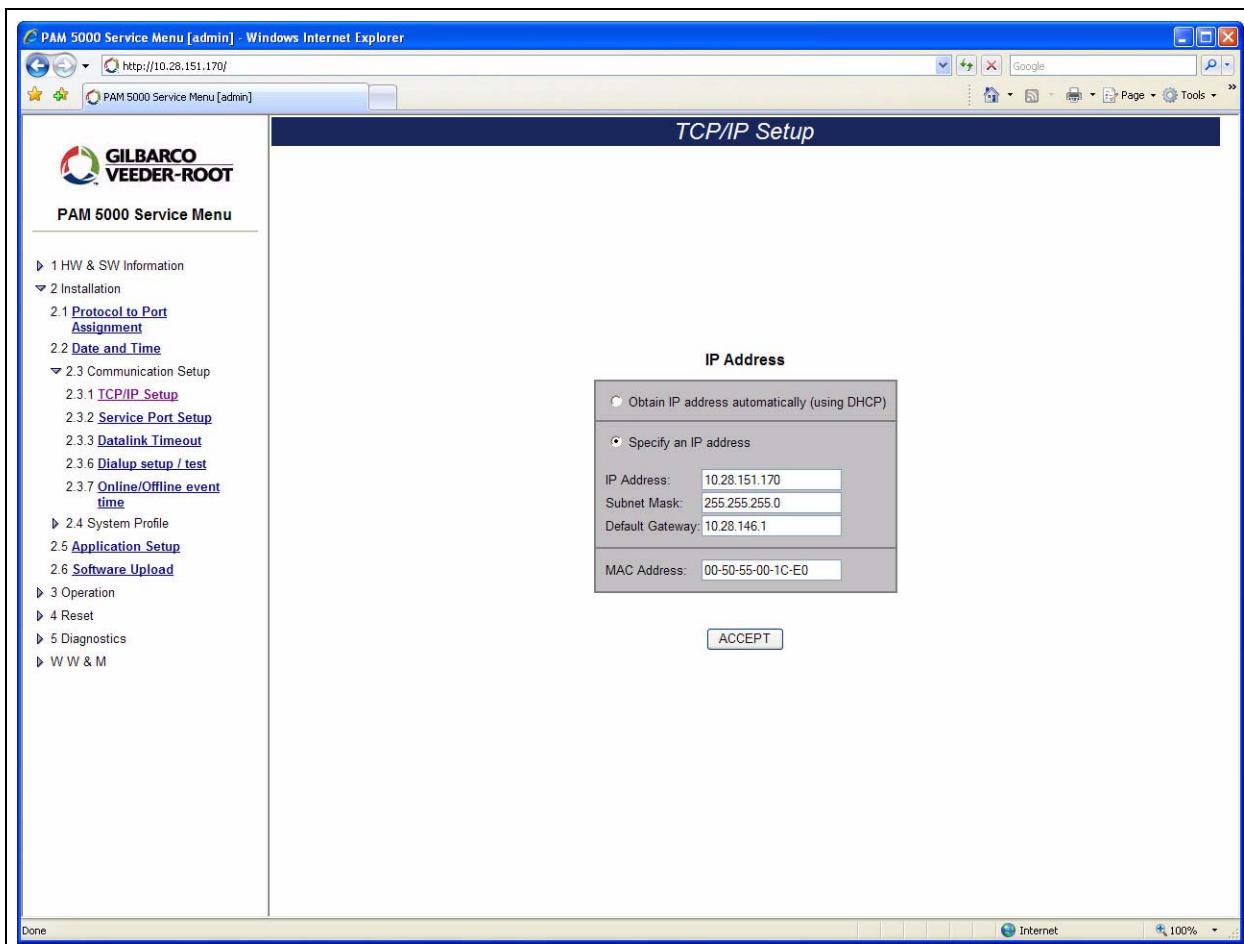
Obtain IP address automatically: The PAM 5000 requests a lease of an IP address from a DHCP server. When shipped from the factory, the PAM 5000 does not use DHCP.

Specify an IP address: You can enter a fixed IP address in standard dot notation. This is used if the network does not have a DHCP server, and the IP address needs to be changed from the factory setting. If the PAM 5000 does not get an IP address from a DHCP server, the factory setting is used. It is 10.10.10.1xx, where xx denotes the last two digits of the board's serial number. The default IP address is within a range for "private networks"; so there is no conflict with public Internet IP addresses.

Subnet Mask: Using a subnet mask increases the routing efficiency of the network. Sub-netting keeps the information within the designated subnet mask and reduces traffic over the entire network. Enter the subnet mask in standard dot notation. For example, 255.255.255.0.

Default Gateway IP Address of the device: Provides routing between subnets or networks. Enter the IP address in standard dot notation. The factory setting for default gateway is 10.10.10.1, to avoid conflict with the factory setting for the PAM 5000 boards.

MAC Address: Is the fixed unique physical address for each Ethernet Module. The MAC address is, for example, used for DHCP server configuration of the Network client.

ACCEPT: To save the entered changes, click **ACCEPT**. The new value will be effective after the next board reset.

Figure 4-19: Web Page (Menu 2.3.1) TCP/IP Setup
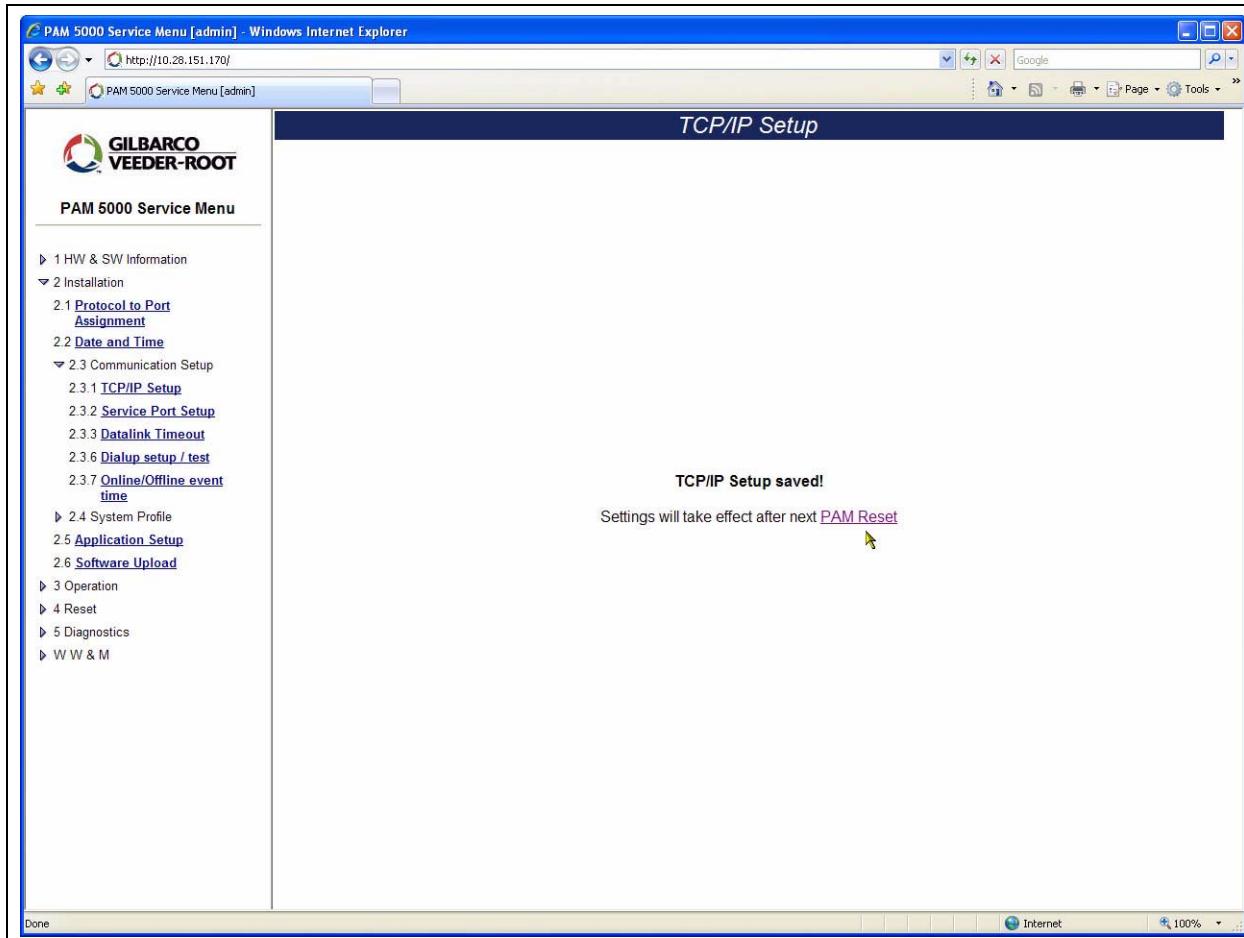
Use the PAM Reset (menu 4) link to perform a Soft Reset (Soft Reset does not clear any configuration data or transactions). The new TCP/IP setup will be active after the reset.

To set the above mentioned TCP/IP parameters from the local service panel, proceed to menu 2.3.1 and press the <**RIGHT**> button to display the current IP address and proceed to the setup menu.

```
┌─────────────────────┐         ┌─────────────────────┐         ┌─────────────────────┐
│ TCP/IP              │   ↔     │ IP ADDRESS          │   ↔     │ USE DHCP?           │
│ 2.3.1               │         │ 10.10.10.199        │         │ NO                  │
└─────────────────────┘         └─────────────────────┘         └─────────────────────┘
```
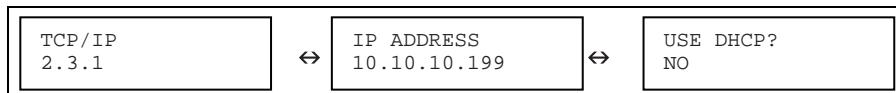
If you select **Yes**, IP Address, subnet mask, and default gateway will be received from the network's DHCP Server. USE DHCP is set to "No" from factory.

If there is no connection to a DHCP Server, the network parameters will be as set from factory, and must be changed manually.

```
┌─────────────────────┐         ┌─────────────────────┐         ┌─────────────────────┐
│ SET IP ADDRESS      │   ↔     │ SET SUBNET MASK     │   ↔     │ SET DEF. GATEWAY    │
│ 10. 10. 10.101      │         │ 255.255.255.0       │         │  10. 10. 10.  1     │
└─────────────────────┘         └─────────────────────┘         └─────────────────────┘

                                                                          ↔

                                                                ┌─────────────────────┐
                                                                │ NEW SETUP           │
                                                                │ RESET NOW?          │
                                                                └─────────────────────┘
```
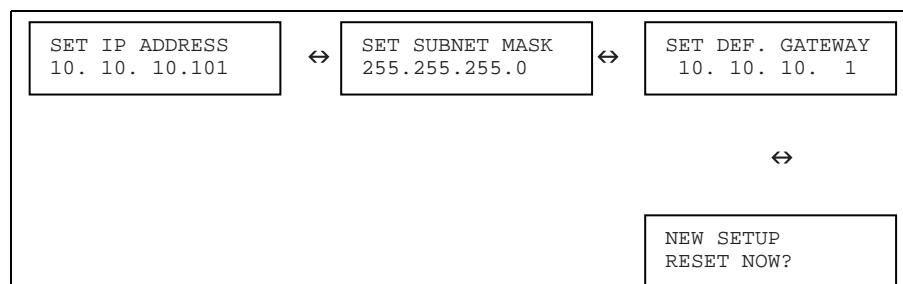
Finally, press **<OK>** to perform the board reset, which activates the new setting. If the reset is not performed at this stage, the new settings will not be activated until a board reset has been performed.

Note: The Service Panel must be used to set the TCP/IP parameters for the first time (Factory).

Service Port Baud Rate (Menu 2.3.2)

The menu for setting the Service Port is shown in Figure 4-20.

Figure 4-20: Web Page (Menu 2.3.2) Service Port Setup
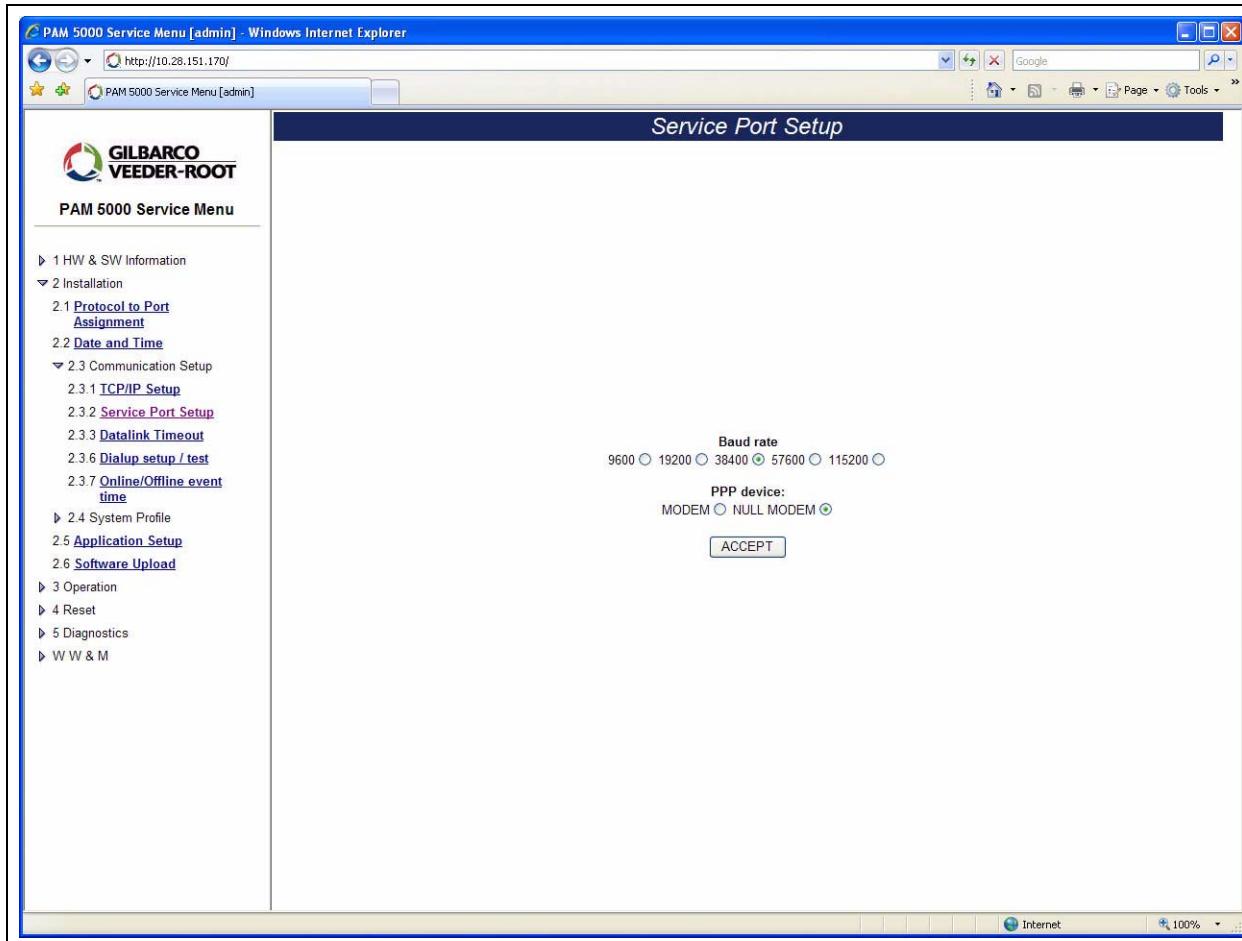
The PAM 5000 CPB509 board has an RS-232 port that can be used to connect a PC for local service diagnostics, similar to when it is connected via the Ethernet.

Service Port Baud rate can be selected in the range from 9600 to 115200 bits/sec (default value is 38400).

The PPP protocol can be set for Modem connection or NULL Modem. Default is NULL Modem (refer to "Modem Dialup and Setup/Test (Menu 2.3.6)" on page 41 for Modem dialup setup and "Null Modem Connection" on page A-2 for Null modem connection).

To save the entered changes, click **ACCEPT**. The new value will be effective after a soft reset.

In the Local Service Panel, go to menu 2.3.2 and press the <**RIGHT**> button to step through the parameters.

```
┌──────────────────────┐      ┌──────────────────────┐      ┌──────────────────────┐
│ SVCPORT SET-UP       │      │ SVCPORT BAUD?        │      │ SVCPORT DEVICE       │
│ 2.3.2                │ ↔    │ 38400                │ ↔    │ MODEM                │
└──────────────────────┘      └──────────────────────┘      └──────────────────────┘
```
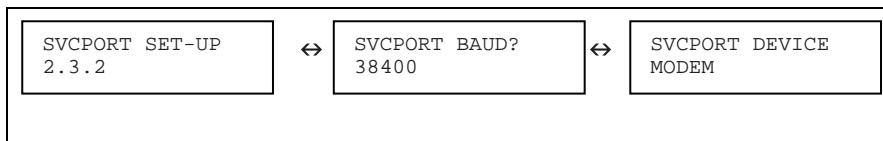
To change the values (for example, toggle between MODEM and NULL MODEM), use the <UP> and <DOWN> buttons and press **<OK>** to enter the new setting. The new values will be effective after a Soft Reset.

Datalink Timeout for Serial Driver (Menu 2.3.3) (Not applicable for United States)
The datalink timeout for the serial PSS driver (Gilbarco/DOMS POS) can be changed in the menu 2.3.3. The default value is 50 ms (range 1-1000 ms).

IMPORTANT INFORMATION

By default, the Gilbarco POS via serial connection is included in the 410-27-1.xx application, but cannot be used together with the PAM POS.

Modem Dialup and Setup/Test (Menu 2.3.6)

Modem Setup Parameters
The Modem setup can be used to set the modem's baud rate, initialization string, dialup phone number, user and password.

PPP device: Selection between a Modem and a Null Modem connection.

Baud rate: The modem baud rate can be selected in the range from 9600 to 115200 bits/sec.

Modem Init string: This is the initialization string that will be sent to the modem at power up and before dialup. (for example, an AT command ATS0=1)

Modem Dial string: The modem dialup phone number (for example, +4543299400)

Username: A user name used in the modem communication to access a Host (any user names may be used).

Password: A password used in the modem communication to access a Host (any password may be used).

Figure 4-21: Web Page (Menu 2.3.6) Dialup Setup/Test
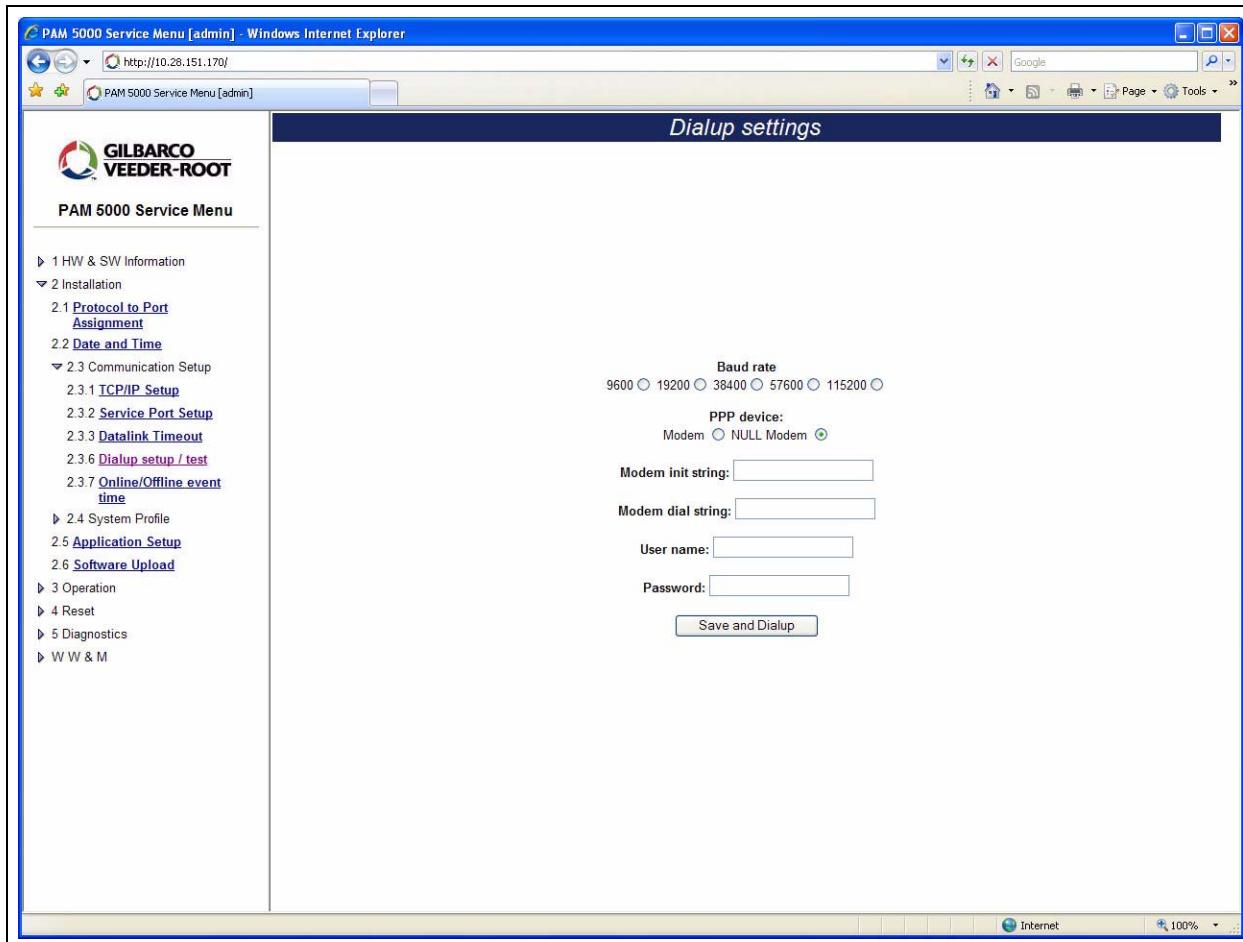
Modem Dialup Test

This test is used for testing a connection to a Host. When all Modem Dialup parameters have been set, click **Save and Dialup**.

Figure 4-22: Web Page (Menu 2.3.6) Dialup Setup/Test
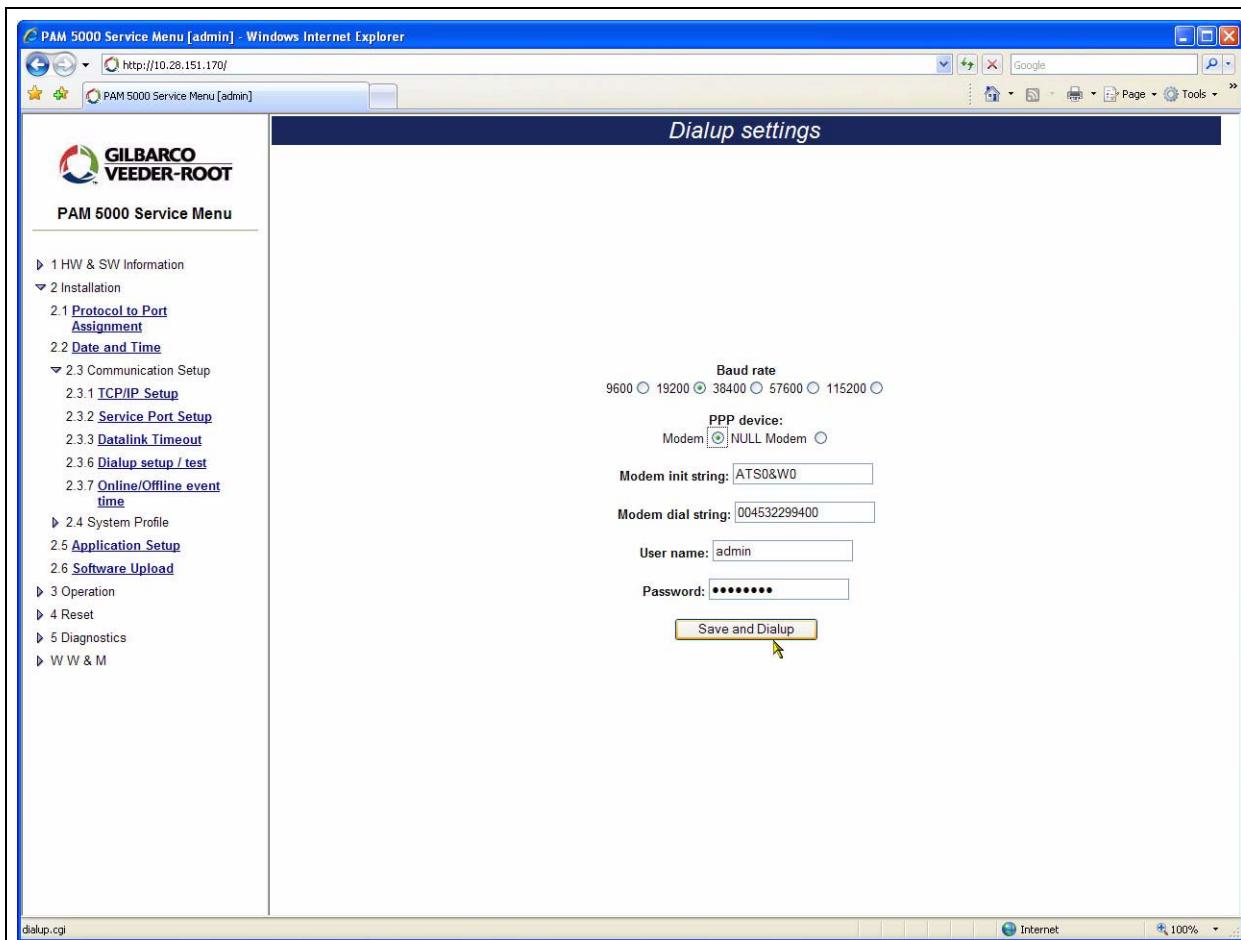
Click **Hang up** to terminate dialup test.

Figure 4-23: Web Page (Menu 2.3.6) Test Dialup

*Note: The dialup test must be manually stopped (click **Hang up**). There is no timeout for the dialup test.*

Figure 4-24: Web Page (Menu 2.3.6) Test Dialup Stopped
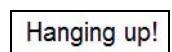
System Profile (Menu 2.4)

Password (Menu 2.4.1)

The PAM 5000 system is protected by a four-level password system, one password per user. They can all be changed by the Administrator user (refer to "Password (Menu 2.4.1)" on page 44). The user privileges are fixed and cannot be changed from web.

- admin
- host
- service
- guest

Note: Apart from the users mentioned above, "doms" is another user supported for special purposes.

The "admin" username is used by the PAM 5000 System Administrator and the "host" user is used by the Host Administrator (access via the Host protocol). The "admin" and "host" users have all privileges, but only the "admin" user can change password for all other users. The "host" user name can be used to access the PAM 5000 web in the same way as "admin" user.

The "service" user is used by the service technicians. The user has all privileges needed for system service activities as "read only", except creating peeps traces and performing Master Reset.

The "guest" user can be used by all. The guest has only some read permissions.

The "doms" user is used by Gilbarco technicians. The privileges are the same as for the admin user (except changing password).

The PAM 5000 will have a password validation routine with User ID/Password combinations as described below:

User/Password Combinations		Comments
USER	PASSWORD	
"doms"	Xxxxxxx	All passwords accepted
"admin"	Xxxxxxx	All passwords accepted
"host"	Xxxxxxx	All passwords accepted
"service"	Xxxxxxx	All passwords accepted
"guest"	Xxxxxxx	All passwords accepted

Change Default Password

The default password can be changed by a user with administrator privileges (except the "doms" Gilbarco technician password, which is fixed). When the password has been changed, the browser needs to be reconnected before the new password is used (refresh the browser).

The minimum password length is four and maximum is sixteen.

Figure 4-25: Web Page (Menu 2.4.1) Change User Password (admin)
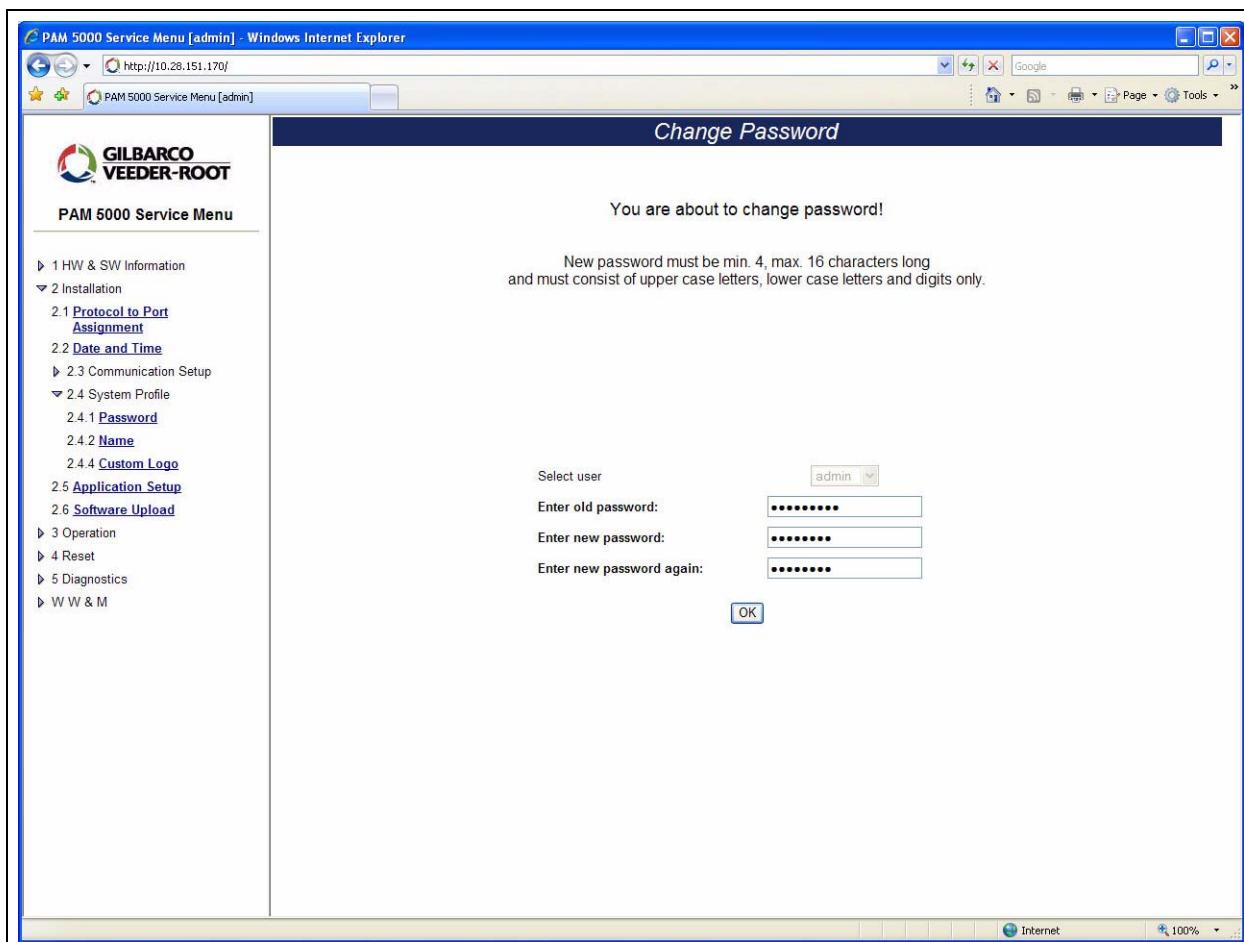
Forgotten Password (Default Password)

After a user has changed the password, the original default password "password" can be re-enabled (temporarily) from the Local Service Panel. The default password will be active until disabled again (manually from the Local Service Panel or automatically at the end of current day).

Note: All users' passwords will be set to default values.

For enabling the default password, go to menu 2.4.1 and press the <**RIGHT**> button.

```
┌─────────────────────┐        ┌─────────────────────┐
│ DEFAULT PASSWORD    │   ↔    │ ENABLE D.PASSW?     │
│ 2.4.1               │        │ YES                 │
│                     │        │                     │
└─────────────────────┘        └─────────────────────┘
```
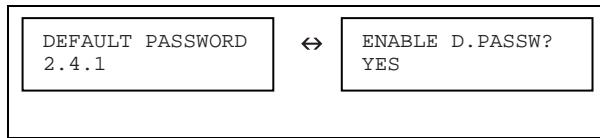
Then, toggle the value with the <UP> and <DOWN> buttons and press the <**OK**> button to enter the selected value.

Note: Multiple bad password entries (3 times) will block access for one minute. Hereafter, one try is permitted for every minute, until login is successful with the correct password.

All passwords will be set back to default after a PAM 5000 Super Master Reset [refer to "Super Master Reset (Menu 4.3)" on page 74].

System Name (Menu 2.4.2)
In this menu (web only), a system name can be entered. The name will appear on the start page, in order to help identify the different systems.

The factory setting for the system name is the serial number of the board.

The maximum length for the system name is 60 characters.

Figure 4-26: Web Page (Menu 2.4.2) Change System Name
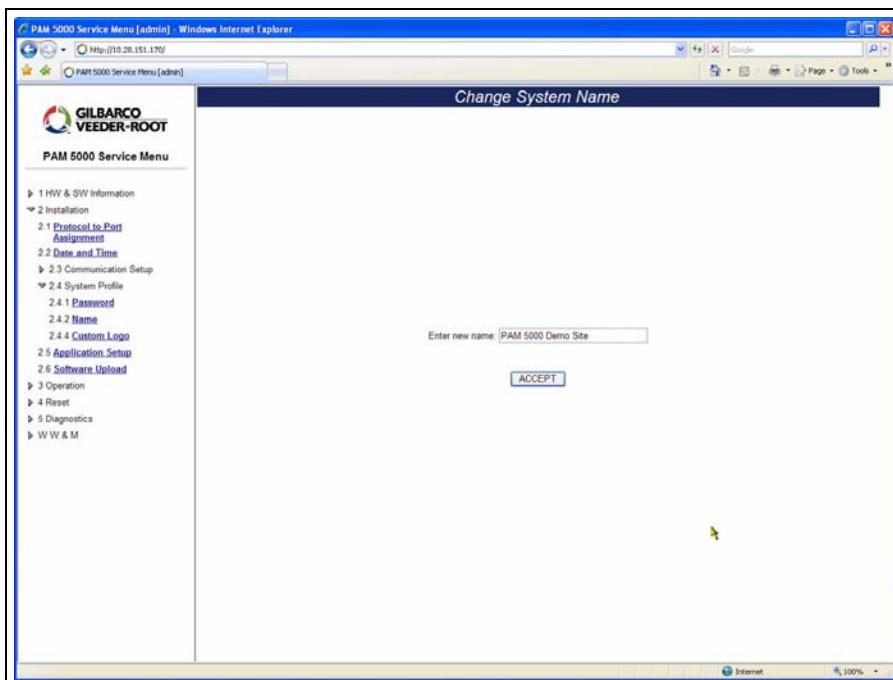
Note: The default system name (board serial number) will be active after a Super Master Reset [refer to "Super Master Reset (Menu 4.3)" on page 74].

Customer Logo (Menu 2.4.4)

It is possible to upload another customer logo to the PAM 5000 web. The new logo will only be visible in the PAM 5000 Application and not when running in the BOOT program.

The new logo must be in a "GIF" format and the maximum file size is 10 Kb.

Upload New Logo

The new logo can be uploaded from the PAM 5000 web menu 2.4.4 using the "Browser" and "Upload" buttons.

Figure 4-27: Web Page (Menu 2.4.4) Upload Custom Logo
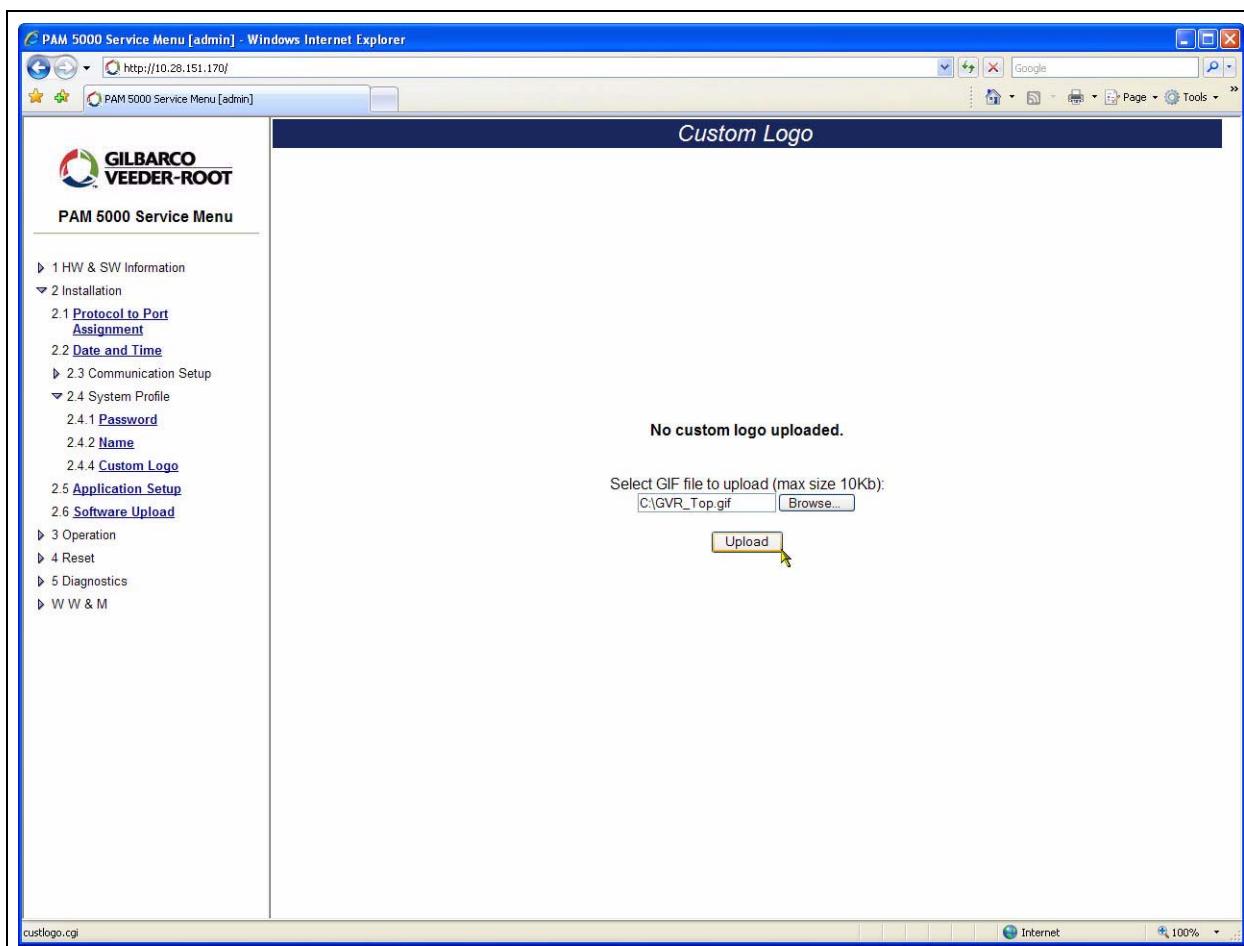
If the logo is accepted by the PAM 5000, the web browser needs to be refreshed, before the new logo is activated and displayed.

Figure 4-28: Web Page (Menu 2.4.4) New Custom Logo Accepted (Refresh to Activate)
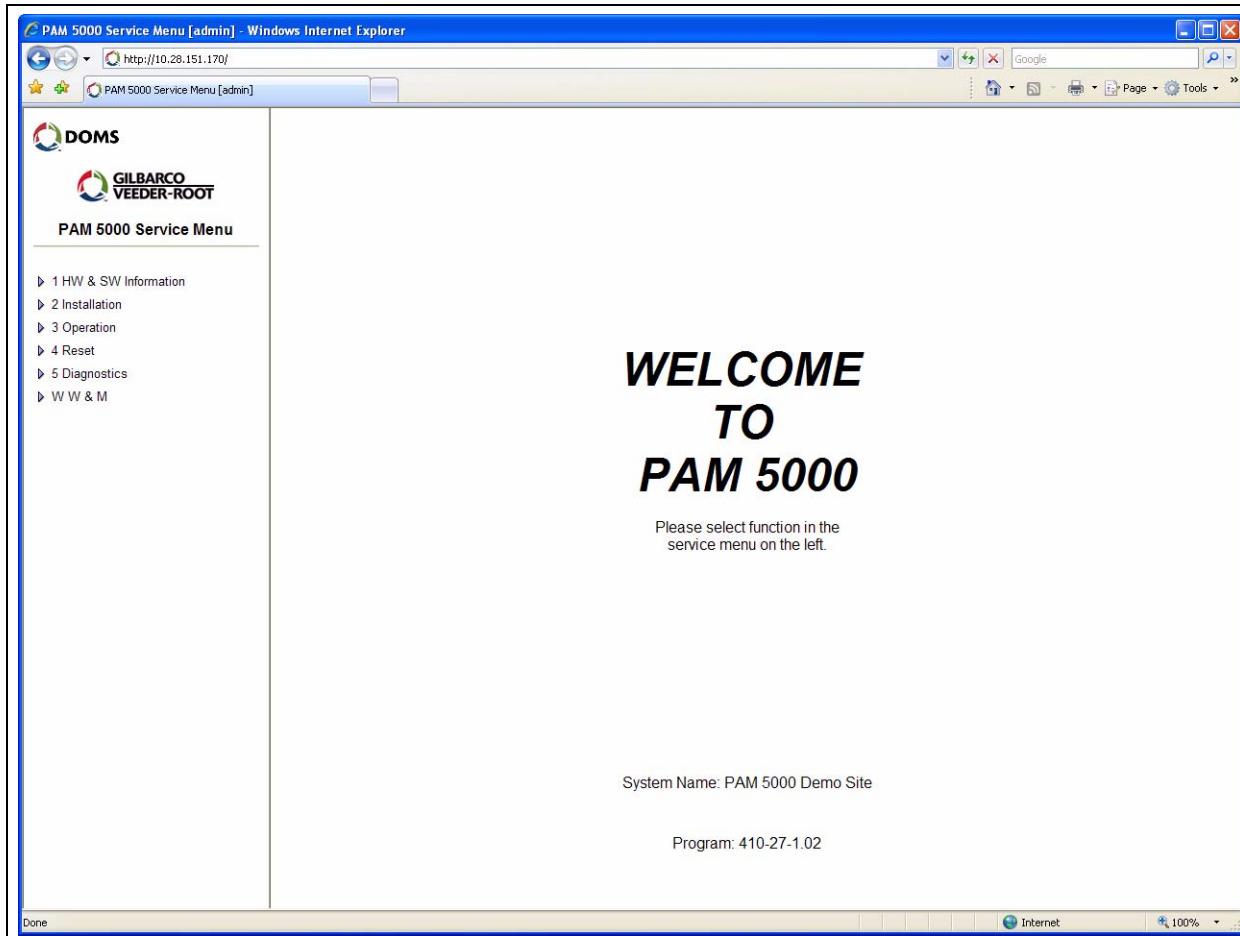
The new logo will be displayed beside the Gilbarco logo, above the PAM 5000 Application Service Menu. The new logo will be active until you change/remove the logo [refer to Change or Remove Custom Logo in the section "Customer Logo (Menu 2.4.4)" on page 47] or at Super Master Reset.

Change or Remove Custom Logo
To change a logo, choose PAM 5000 web menu 2.4.4 and use the "Browser" and "Upload" buttons to upload a new GIF. The previously uploaded logo will be replaced by the new logo.

An already uploaded logo can be removed from PAM 5000 web menu 2.4.4 using the "Remove" button.

Figure 4-29: Web Page (Menu 2.4.4) Change/Remove Custom Logo
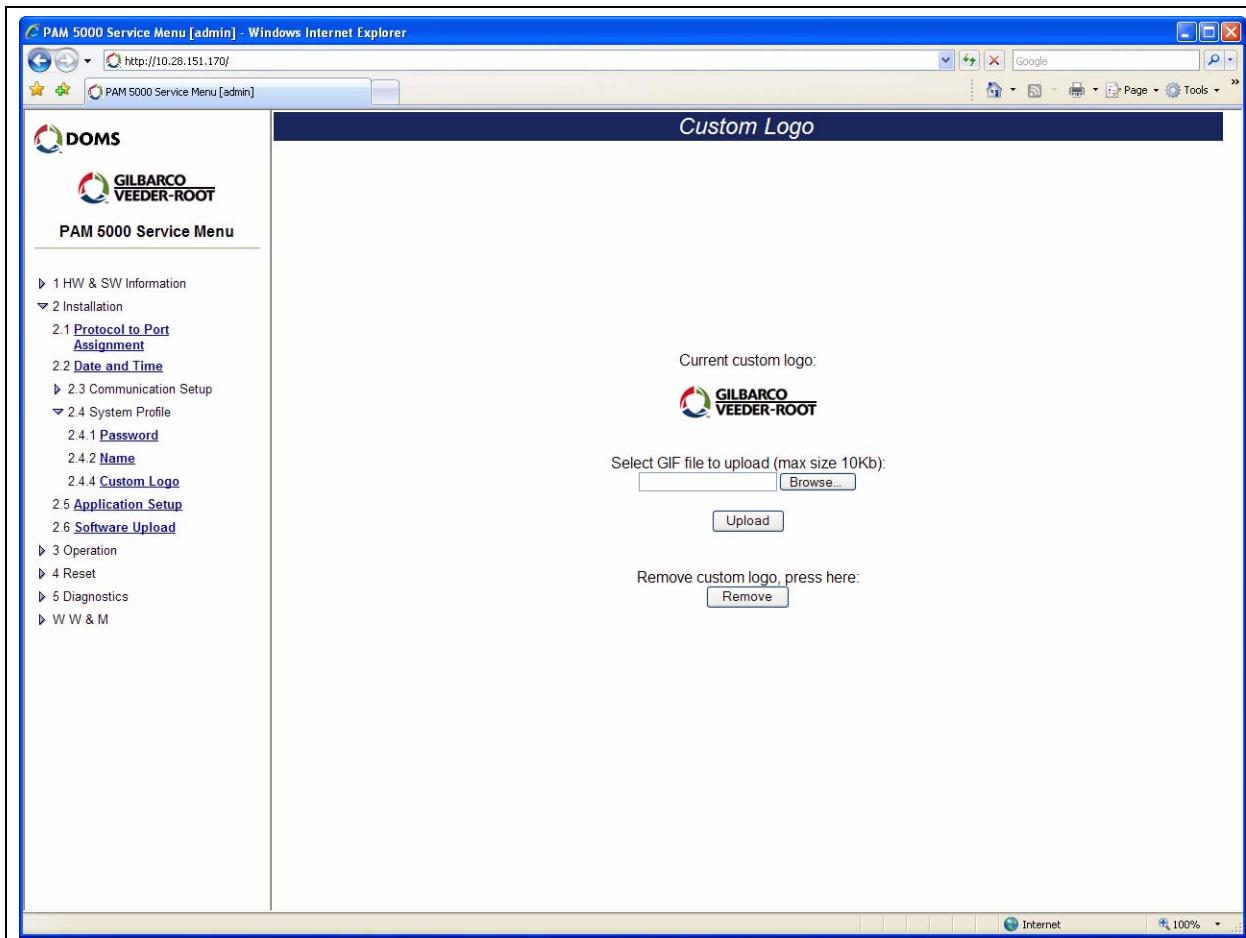
Note: *If the logo is changed or removed from the PAM 5000, the web browser needs to be refreshed before the new logo is activated and displayed.*

Application Setup (Menu 2.5)

During installation, various application-dependent functionalities are configurable from the LSP using the Application Setup Menu 2.5. The PAM Protocol related setup can be set by selections from this menu.

Application Setup

Select:
- 1 - Select Group (Forecourt Control Setup)
- 2 - Forecourt Application (PAM-related)

Figure 4-30: Web Page (Menu 2.5) Application Setup
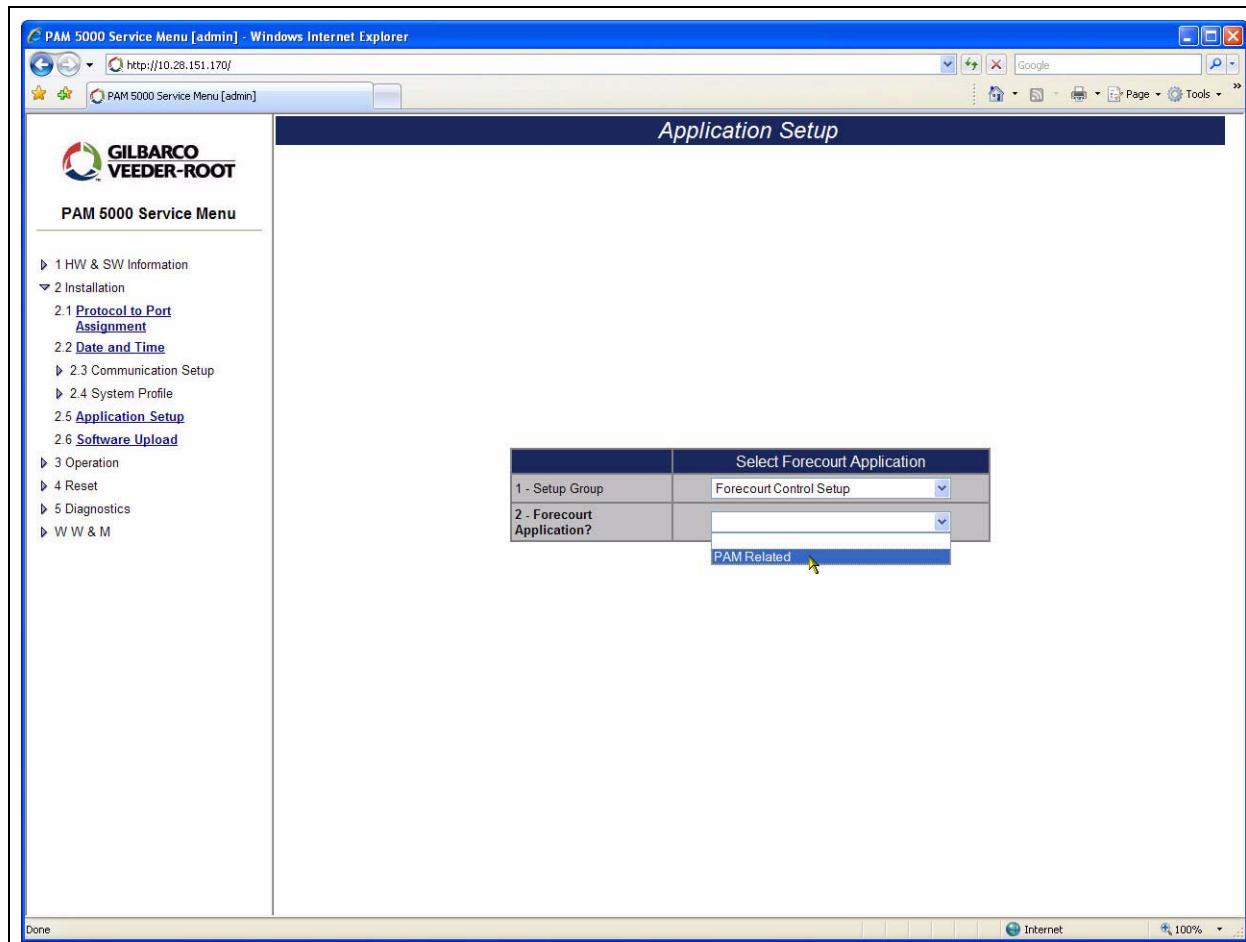
PAM Protocol Related Setup (Application Menu 2.5) via Web

Figure 4-31: Web Page (Menu 2.5) Application Setup (PAM-related)
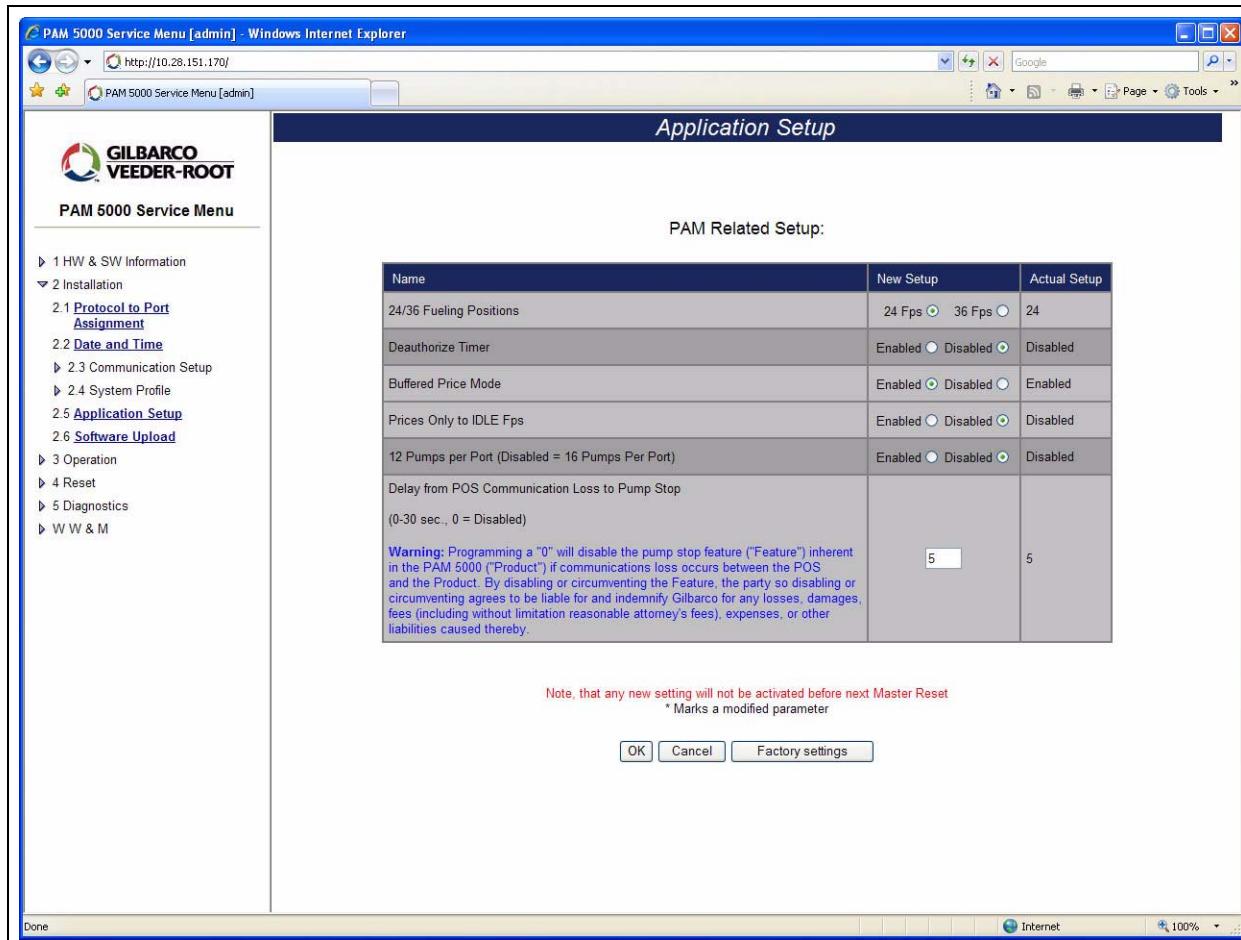
The PAM-related setup is used to configure different options for the PAM POS protocol. The PAM 5000 default settings are similar to those of the PAM 1000 controller using the Enhanced protocol (version 32.1.60):

- 24 Fueling Positions
- De-authorize timer disabled
- Buffered price mode enabled (PAM 1000 default was: disabled)
- Prices Only to IDLE FPs disabled
- 12 Pumps per Port disabled (new)
- 5 seconds delay from POS Communication Loss to Pump Stop (new)

For a detailed comparison between the PAM 1000 and PAM 5000 configuration, refer to "PAM 1000/PAM 5000 Configuration Defaults" on page F-1.

Fueling Positions: The maximum number of fueling points can be 24 or 36.

Deauthorize Timer: The "Deauthorize timer" is fixed at 4 minutes. Pumps will return from AUTH to IDLE state after the timeout. This is controlled by the PAM 5000. If the timer is disabled, the pumps will remain authorized until the POS deauthorizes.

Buffered Price Mode: If the Buffed Price Mode is enabled, a new price from the POS will be accepted and the price sent to the pumps when they are in "IDLE" or "CALL" state. If Buffered Price Mode is disabled, no new price will be accepted before pumps are in IDLE state.

Prices Only to IDLE FPs: Can only be selected if Buffered Price Mode is enabled. It will be disabled automatically if the Buffered Price Mode is disabled.

12 Pumps per Port: Is new compared to PAM 1000. By default, 16 pumps will be controlled by each of the first 2 pump ports (POS FP 1-16, 17-32) and 4 pumps by the third port (POS FP 33-36).

If "12 Pumps per Port" is enabled, the PAM will control 12 pumps on each port/loop as PAM 1000.

Delay from POS Communication Loss to Pump Stop: Is new compared to PAM 1000. This setting and its functionality is a replacement of the PAM 1000 RS-232 DCD signal detection on the communication line between PAM and POS. The delay defines the maximum time between two PAM POS commands.

If no PAM POS command has been received within this time, all authorized pumps are stopped. POS must send a valid POS command with a frequency high enough to avoid timeout. The delay can be changed from 0-30 seconds.

If 0 (zero) is used, the PAM 5000 will disable the functionality and the PAM 5000 will NOT stop pumps due to PAM POS communication loss.

Notes:1) Any change of PAM Related Setup will be saved but not effectuated when selecting the "OK" button. A PAM 5000 Master Reset [refer to "Master Reset (Menu 4.2)" on page 73] is needed in order to activate the new settings (all pump configuration will be lost after Master Reset).

2) If the POS is a Verifone® POS, this setting should be set to 15 seconds (default is 5 seconds).

The default PAM Related Setup will be used after a PAM 5000 Super Master Reset [refer to "Super Master Reset (Menu 4.3)" on page 74].

PAM Protocol Related Setup (Application Menu 2.5) via Local Service Panel

The PAM Related Setup is also available through the Local Service Panel.

In addition to the PAM Related setup via web, the PAM POS Protocol baud rate is also changeable via Local Service Panel.

To read and change the PAM Related Setup on the Local Service Panel, navigate to menu 2.5 and then press <**RIGHT**>.

Figure 4-32: Menu selection diagram for PAM Related Setup

```
┌──────────────────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────┐                                                          │
│  │ APPL SETUP           │                                                          │
│  │ 2.5                  │                                                          │
│  └──────────────────────┘                                                          │
│            ↕                                                                        │
│  ┌──────────────────┐     ┌──────────────────┐   ┌──────────────────┐  ┌──────────────────┐ │
│  │ FC SETUP         │ ↔   │ SET DEFAULTS     │ ↔ │ PAM BAUD RATE    │↔ │ NO FPS           │ │
│  │ PAM RELEATED     │     │ NO               │   │ PAM4800          │  │ NEW:24 ACT:24    │ │
│  └──────────────────┘     └──────────────────┘   └──────────────────┘  └──────────────────┘ │
│                                                                                 ↕  │
│  ┌──────────────────┐     ┌──────────────────┐   ┌──────────────────┐  ┌──────────────────┐ │
│  │ NO PUMP PER PORT │ ↔   │ PRI ONLY IN IDLE │ ↔ │ BUFF. PRICE MODE │↔ │ DEAUTH TIMER     │ │
│  │ NEW:16 ACT:16    │     │ NEW:NO ACT:NO    │   │ NEW:YES ACT:YES  │  │ NEW:NO ACT:NO    │ │
│  └──────────────────┘     └──────────────────┘   └──────────────────┘  └──────────────────┘ │
│            ↕                                                                        │
│  ┌──────────────────┐                                                              │
│  │ POS OFFL. DELAY  │  *                                                           │
│  │ NEW:05 ACT:05    │                                                              │
│  └──────────────────┘                                                              │
└──────────────────────────────────────────────────────────────────────────────────┘
```
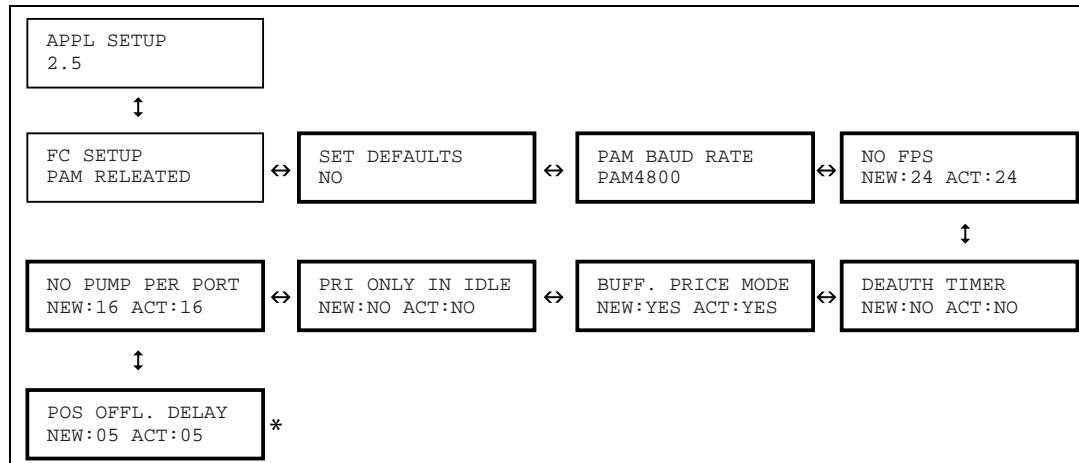
Use <LEFT> and <RIGHT> buttons to select previous or next item and <UP> or <DOWN> to change the value of the current selected item.

While any of the items shown in Figure 4-32 with a bold style panel is active, it is possible to save any changed value by pressing the <OK> button, and effectuate with <OK> once more (see description below).

When <RIGHT> button is pressed in menu "FC SETUP PAM RELATED", the PAM related setup already saved (NEW) and current running setup (ACTual) is read.

If a value has been saved on the system but not effectuated yet, an asterisk (*) is shown to the right of the value. However, this should only be the case if a change has been made from the PAM related setup on the web page menu, without performing a PAM Master Reset afterwards.

If value YES is selected in item SET DEFAULTS, the default values will be loaded when pressing the <RIGHT> button or the <OK> button.

Save and effectuate new settings
It is only possible to save PAM related changes when one of the changeable item menus is displayed (items with bold style panels in above menu selection diagram).

To save and effectuate PAM related changes made via Local Service Panel, press <**OK**> button once to get the prompt:

```
┌────────────────────┐
│ SAVE SETUP AND     │
│ MASTERRESET NOW?   │
└────────────────────┘
```

Then press <**OK**> again to accept/save settings and Master Reset PAM. When PAM is up and running again, the new settings will be in effect. If any other button is pressed, the previously selected item will be displayed again, and nothing is saved.

If you press the <OK> button while no PAM related changes have been made via Local Service Panel, the following is displayed:

NO CHANGE
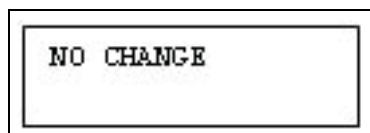
and after a few seconds, the display returns to menu 2.5.

* Delay from POS communication loss to pump stop:

CAUTION

Programming a "0" will disable the pump stop feature ("Feature") inherent in the PAM 5000 ("Product") if communications loss occurs between the POS and the Product. By disabling or circumventing the feature, the party so disabling or circumventing agrees to be liable for and indemnify Gilbarco for any losses, damages, fees (including without limitation reasonable attorney's fees), expenses, or other liabilities caused thereby.

Software Upload (Menu 2.6)

PAM 5000 software upload is done by uploading a binary file via FTP [refer to "Software Upload (FTP)" on page 60] or by using the Web Interface (Java CGI script). The PC must support Java in order to work.

A program change will automatically result in a Master Reset of the system. It is possible to upload new BOOT and Application software to the PAM 5000.

BOOT: The PAM 5000 BOOT program can be changed by uploading a BOOT exchange program 496-03-1xx. This program will clear the full memory including BOOT and Application program and upload a New BOOT program to the PAM 5000. Application program needs to be uploaded after a BOOT exchange.

Application: Uploading a new Application program to the PAM 5000 will result in Master Reset. All the PAM 5000 configuration data (Protocol to Port and PAM related setup) will not be lost.

Note: The PAM 5000 Web Software Upload Java Applet is only available from the Application program. It is important NOT to close the Applet while uploading new programs. If this happens, a manual upload is necessary via an FTP client [refer to "Software Upload (FTP)" on page 60].

Software Upload (Java Applet)

The instructions below are for laptops running on the Windows XP platform. PC prompts for Windows 2000, Windows Vista or other operating system may be different.

IMPORTANT INFORMATION

- JAVA must be installed on the PC before you follow the procedure outlined below.
- It is suggested that you perform a shift close and day close to capture totals before new application software is uploaded, otherwise these totals will be lost!

---

1 Connect an Ethernet crossover cable (Gilbarco part number Q13850-C06 or equivalent) to the Ethernet port on your laptop (or if no Ethernet port is available, use an Ethernet to USB adapter cable and connect the Ethernet crossover cable to a USB port on your laptop). The other end of the crossover cable connects to the external Ethernet port on the PAM 5000 (end opposite the AC power plug).

2 Power up the PAM 5000 and laptop.

3 Right-click **My Network Places** and select "Properties".

4 Right-click **Local Area Connection x** that accesses the Ethernet port or USB port you are using and select "Properties".

5 Click **Internet Protocol TCP/IP** and select "Properties".

6 Ensure that the "Use the following IP address" option is selected. Ensure that the IP Address field is programmed to something OTHER THAN 10.10.10.100, for example, 10.10.10.101 or 10.10.10.240 (first 3 fields must be 10.10.10). Ensure that the Subnet Mask is set to 255.255.255.0. Click **Ok** and close the Local Area Connection Properties screen and Network Connections screen.

7 Open an Internet browser window and enter the following IP address in the address bar: 10.10.10.100.

8 When prompted to connect to 10.10.10.100, type in "admin" for the user name and "password" for the password and click **Ok**. The "Welcome to PAM 5000" screen appears.

9 In the PAM 5000 Service Menu, click **Installation** (2.) to expand it.

10 Click **Software Upload** (2.6). The Software Upload screen appears.

11 Select "Yes, allow software upload" and "Upload now" upload permissions. See Figure 4-33 on page 56.

Figure 4-33: Web Page (Menu 2.6) Software Upload Permission
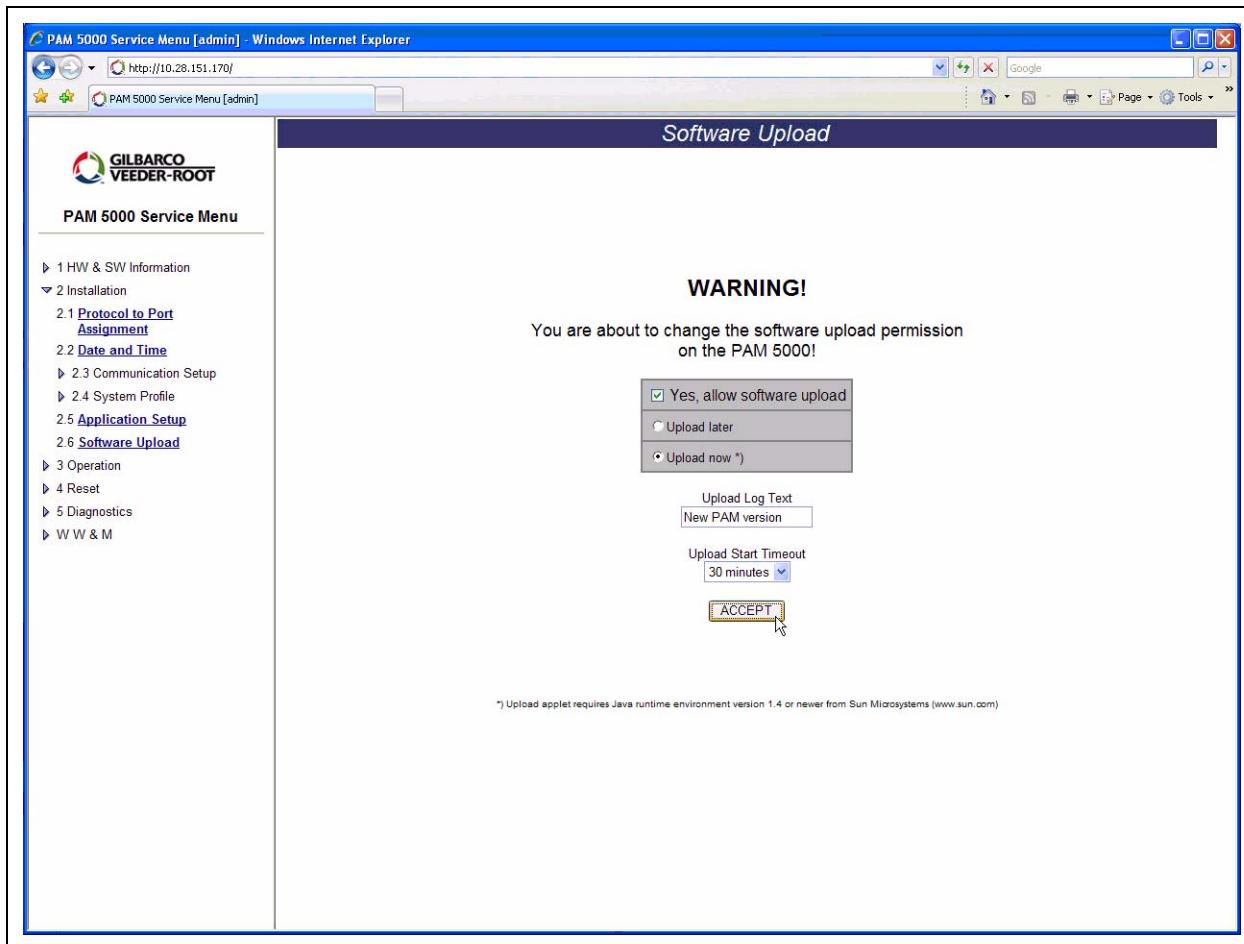
12 In the optional "Upload Log Text" box, you can specify the version to be loaded (or any other identifying information) and then click **Accept**.

Ignore the Upload Startup Timer prompt, if it appears.

13 The Software Upload screen appears and a JAVA pop up window "Password Needed - Networking" may appear. If prompted, enter username ("admin") and password ("password").

IMPORTANT INFORMATION

If this laptop has been connected to a PAM 5000 for the first time, it is imperative that you respond correctly to two pop up windows described in steps 13 and 14 (if they appear); else you will not be able to upload the software to the PAM 5000.

Figure 4-34: Accept Java Applet

14   If you see a Security Warning pop up window:

Warning - Security
Name: ftp
Publisher: Doms A/S
From: http://xxx.xxx.xxx.xxx
[ ] Always trust content from the publisher "RUN" or "CANCEL"

You MUST check [x] Always trust … and click **Run**.

If [ ] Always trust … is not checked and you click **Cancel** or close the window, the following error occurs:

ERROR: Access Exception: access denied, and you will be unable to upload the application.

15   In the Software Upload screen, enter the username ("admin") and password ("password").
     Enter the path and download file name, for example,
     a. **C:\pam 5000 software\41027103.bin** (download file in your C:\pam 5000 software
        directory)
     b. **C:\41027103.bin** (download file on your C:\ drive)

Figure 4-35: Web Page (2.6 Java Applet) PAM Upload Menu
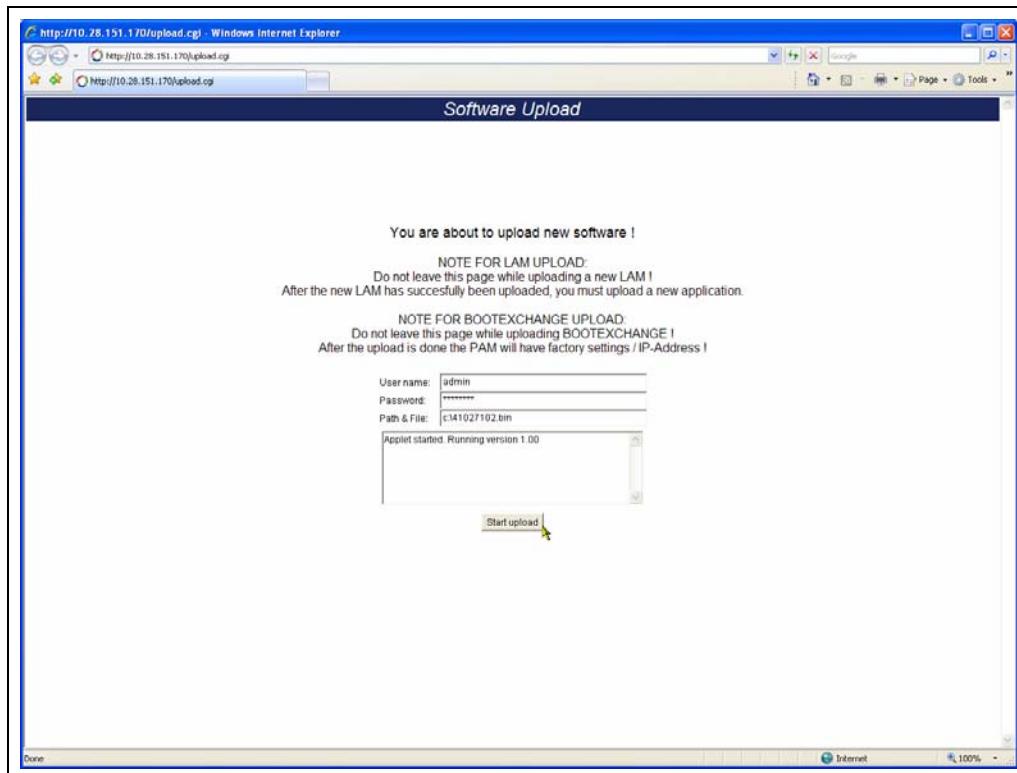
The next step will download the selected application file and master reset the PAM 5000, erasing the current totals, prices, and so on.

Note: PAM 5000 configuration data, for example, programmed baud rate, and so on, will not be lost during the application upload process.

IMPORTANT INFORMATION

- It is imperative that the manager or cashier performs a shift close and/or day close to collect any totals they may need, BEFORE the next step is performed.
- It is also imperative that ALL sales have been completed and paid out and that NO customers are fueling while uploading the new PAM 5000 application software. All pumps must be IDLE.

---

16 Click **Start upload**. The application upload will begin and the PAM 5000 will automatically perform a master reset when the application upload is complete. This step should take approximately 60 seconds to complete. You may observe the status of the upload via the upload log window.

The boot LED will flash now, indicating that the PAM is in boot mode.

DO NOT close the Java applet or browser window while the upload is in progress (see step 17).

17 When the upload log window displays "When finished return to PSS 5000 main menu", the application software upload and master reset are complete.

Figure 4-36: Software Upload Finished
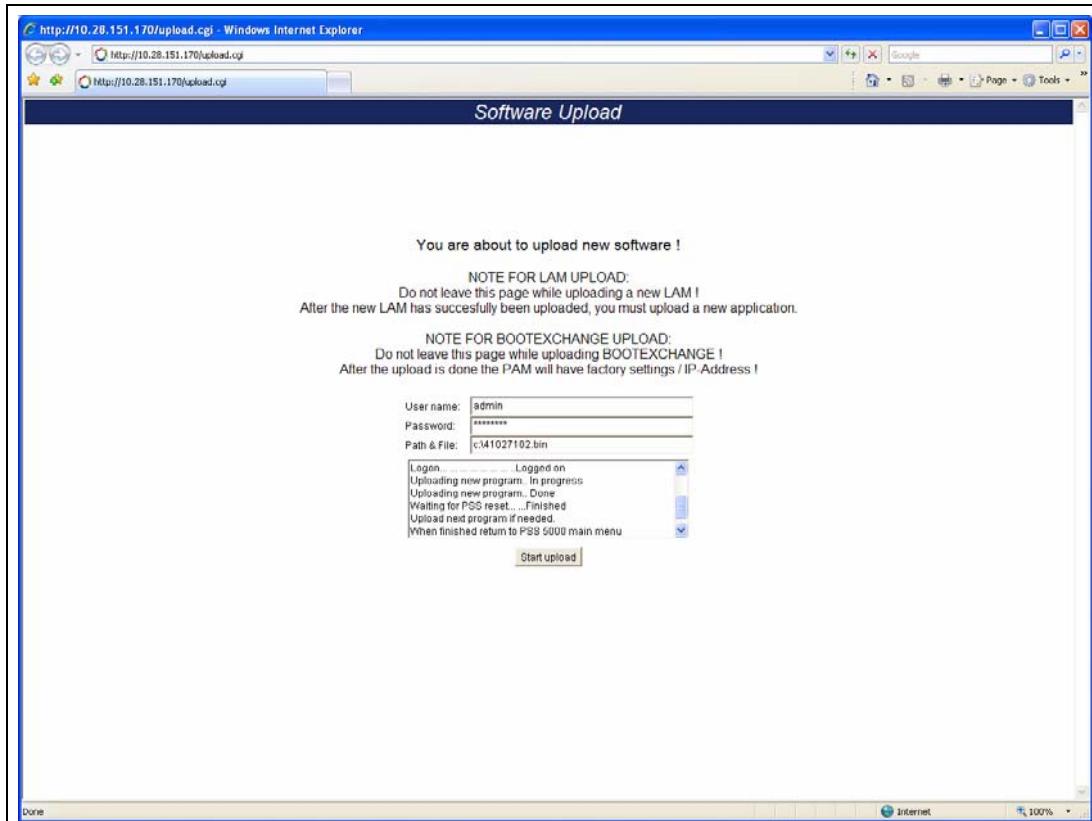
Once the master reset is complete, the boot mode LED should be off and the application mode LED should be flashing. The new software version number will be displayed on the PAM 5000 Local Service Panel LCD display.

You may now close the browser window, exit Windows, shut down your laptop and disconnect your cables.

Note: Application/Boot LEDs on PAM CPU board.

   There are two red LEDs to the left of the Local Service Panel LCD screen on the PAM CPU board, an application LED and a boot LED.

   • During normal operation they are:
    Appl LED = flashing
    Boot LED = Off

> • *When the PAM is in boot mode, for example, during application software upload, they are:*
> *Appl LED = Off*
> *Boot LED = Flashing.*
>
> • *After an application upload and the boot code is writing the upload to the application, they are:*
> *Appl LED = On/Off*
> *Boot LED = Off/On (the two LEDs alternate flashing).*
>
> • *After the application upload is complete and the master reset is occurring, they are:*
> *Appl LED = Rapid flash*
> *Boot LED = Off*

Software Upload (FTP)

An alternative manual method to upgrade the PAM 5000 application is via FTP. This method should be used only as a last resort, if the previous steps fail to achieve a successful upgrade.

An example of when this method may be necessary, is if you have the PAM in the boot mode and are unable to achieve a successful upload. You must either let the boot mode time-out (up to 10 min.) back to the application mode and then repeat the previous steps, or perform the steps below, while the PAM is still in the boot mode.

Notes:1) The steps below MUST be performed BEFORE the 10 min. boot time expires.

> *2) Steps 1 to 10 below are the SAME as the steps 1 to 10 of the "Software Upload (Java Applet)" section on page 55.*

1 Connect an Ethernet crossover cable (Gilbarco part number Q13850-C06 or equivalent) to the Ethernet port on your laptop (or if no Ethernet port is available, use an Ethernet to USB adapter cable and connect the Ethernet crossover cable to a USB port on your laptop). The other end of the crossover cable connects to the external Ethernet port on the PAM 5000 (end opposite the AC power plug).

2 Power up the PAM 5000 and laptop.

3 Right-click **My Network Places** and select **Properties**.

4 Right-click **Local Area Connection x** that accesses the Ethernet port or USB port you are using and select **Properties**.

5 Click **Internet Protocol TCP/IP** and select **Properties**.

6 Ensure that the "Use the following IP address" option is selected. Ensure that the IP Address field is programmed to something OTHER THAN 10.10.10.100, example, 10.10.10.101 or 10.10.10.240 (first 3 fields must be 10.10.10). Ensure the Subnet Mask is set to 255.255.255.0. Click **Ok** and close the Local Area Connection Properties screen and Network Connections screen.

7   Open an Internet browser window and enter the following IP address in the address bar: 10.10.10.100.

8   When prompted to connect to 10.10.10.100, enter "admin" as the user name and "password" as the password and click **Yes**. The "Welcome to PAM 5000" screen should appear.

9   In the PAM 5000 Service Menu, click **Installation** (2.) to expand it.

10   Click **Software Upload** (2.6). The Software Upload screen appears.

11   Select "Yes, allow software upload" and "Upload later" upload permissions.

Figure 4-37: Web Page (Menu 2.6) Software Upload Permission (FTP)
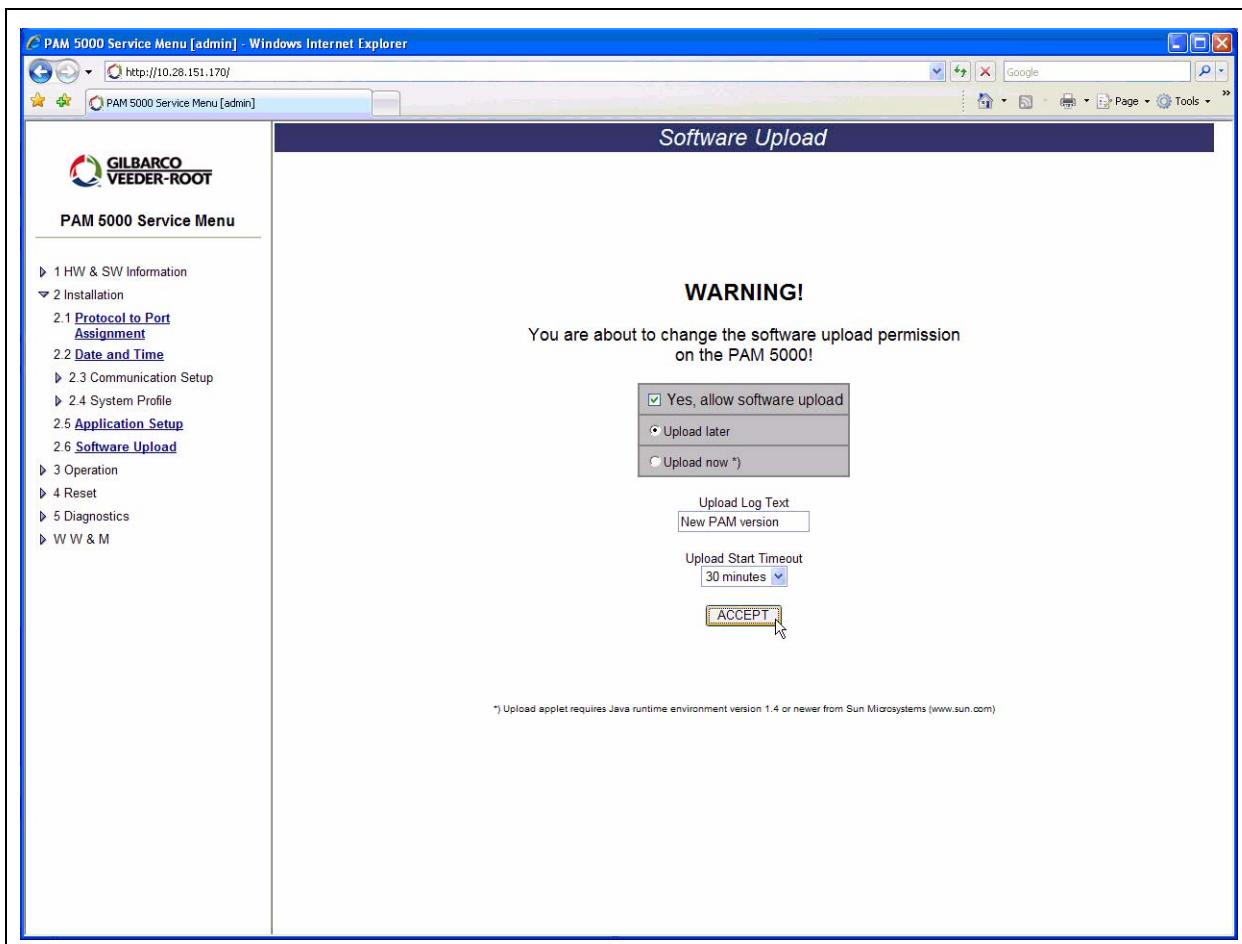
12   In the optional "Upload Log Text" box, you can specify the version to be loaded (or any other identifying information) and then click **Accept**.

The "Upload allowed OK" or "Upload allowed ok until …" screen appears.

Figure 4-38: Web Page (Menu 2.6) Upload Allow OK
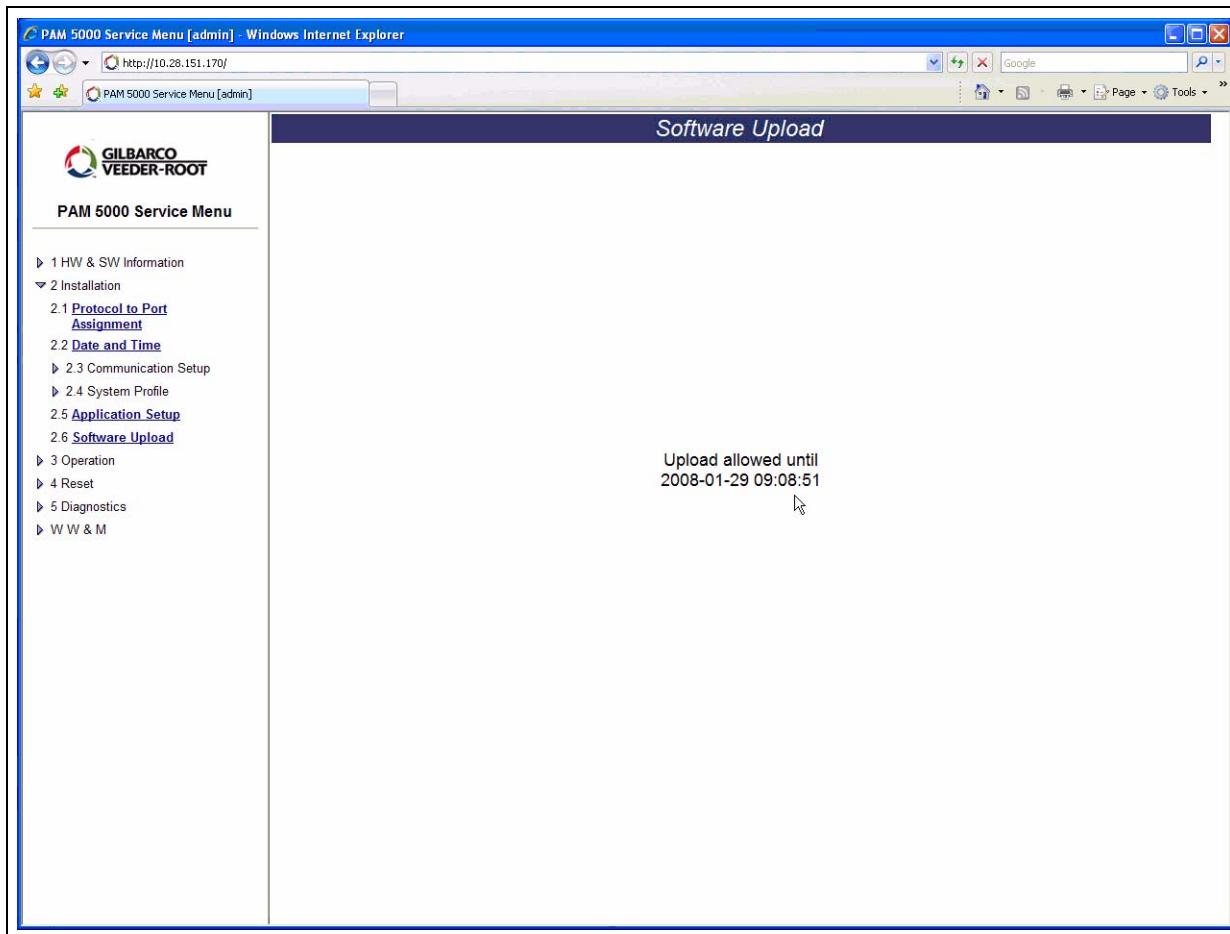
13 The PAM 5000 is now prepared for upload, but in order to continue, the application must be stopped and forced into its boot mode. Select the PAM 5000 Soft Reset (click **Reset** (4.) and then **Soft Reset** (4.1) and press the RESET button). After the Soft Reset, the PAM 5000 "Welcome to PAM 5000" screen appears. The PAM 5000 is now in boot mode and ready for uploading the new application.

Boot mode can be confirmed by observing the boot mode LED to the left of the Local Service Panel LCD display. When in boot mode, this LED will be flashing.

Upload Permission via LSP

In the Local Service Panel, go to menu 2.6 and press the <**RIGHT**> button.
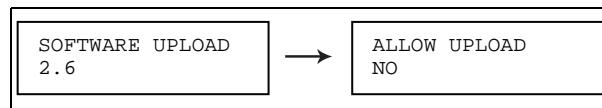
Then use the <UP> and <DOWN> buttons to toggle between YES and NO. Press the <**OK**> button in order to enter the value (blinking).

```
ALLOW UPLOAD          →        ALLOW UPLOAD
YES                            OK
```
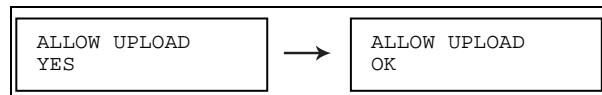
If YES is chosen, the display will show YYYY-MM-DD HH:SS with 30 minutes default "Upload Start Timeout" from the time you press <OK>.

```
ALLOW UPLOAD          →        SOFTWARE UPLOAD
YYYY-MM-DD HH:MM               2.6
```
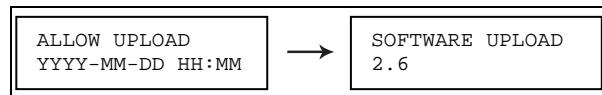
The system is ready for software upload after PAM 5000 Soft Reset [refer to "Soft Reset (Menu 4.1)" on page 72].

To change Upload Start Timeout, navigate to menu 2.6 Software Upload again, and press the <RIGHT> button.

Use the <UP> and <DOWN> buttons to enter the new timeout value. Press the **<OK>** button to enter the value (blinking), and timeout is changed.

```
ALLOW UPLOAD?         →        ALLOW UPLOAD
30 minutes                    YYYY-MM-DD HH:MM
```
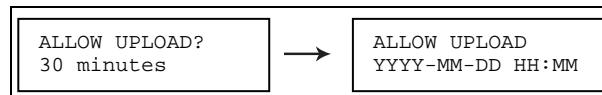
Upload Start Timeout: YYYY-MM-DD HH:MM:SS (default is 30 minutes from the time you press <OK>) means "Yes, Allow Software Upload" flag is cleared if upload is not started within this time.

14 On the open browser window, type:

ftp://admin:password@10.10.10.100/pss_mem/1/prg/

You should see 3 files. One of these files begins with 410… This is the current application running on the PAM 5000. The other files, beginning with 498… and 499… are not to be changed on the PAM 5000.

Figure 4-39: PAM File System, Software Upload Folder (/pss_mem/1/prg)
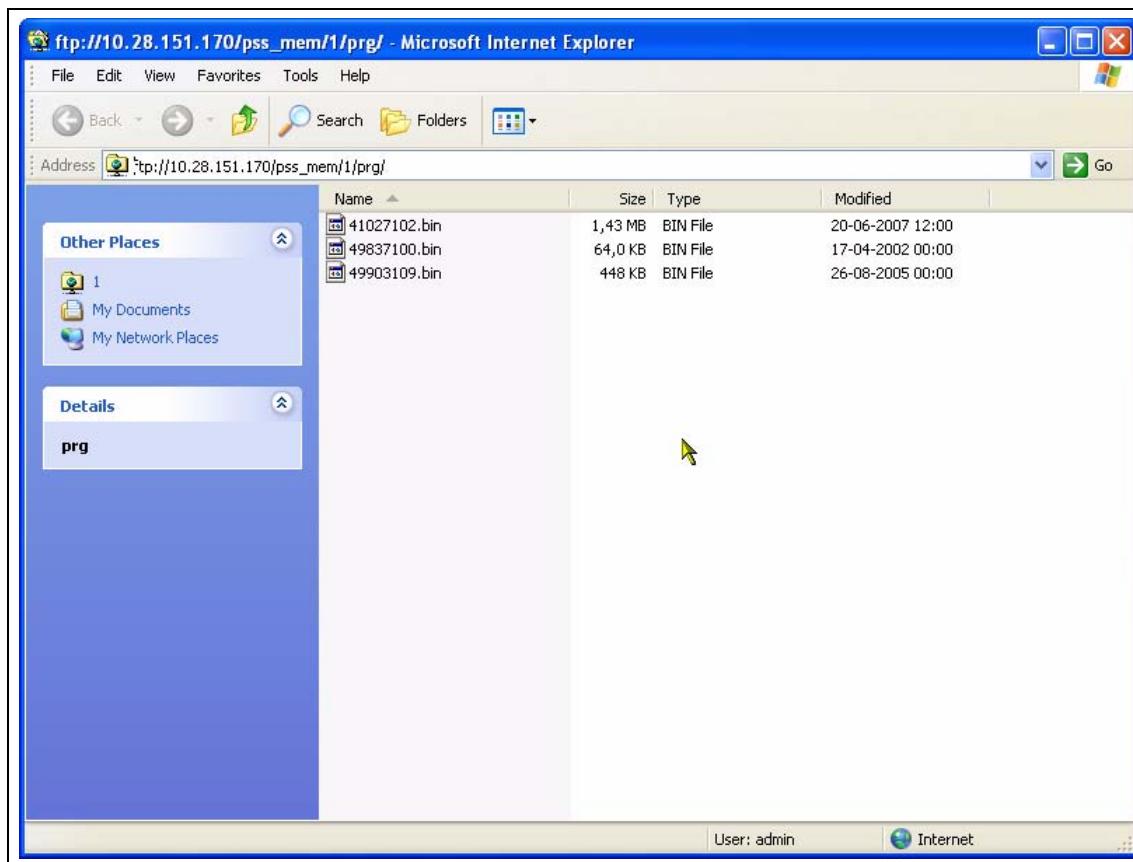
15 To upload the new PAM 5000 application, open a new browser window and browse to where the new PAM 5000 application binary file is stored and drag and drop it onto the **10.10.10.100/pss_mem/1/prg**/ folder.

Figure 4-40: PAM File System, Software Upload Folder (/pss_mem/1/prg)
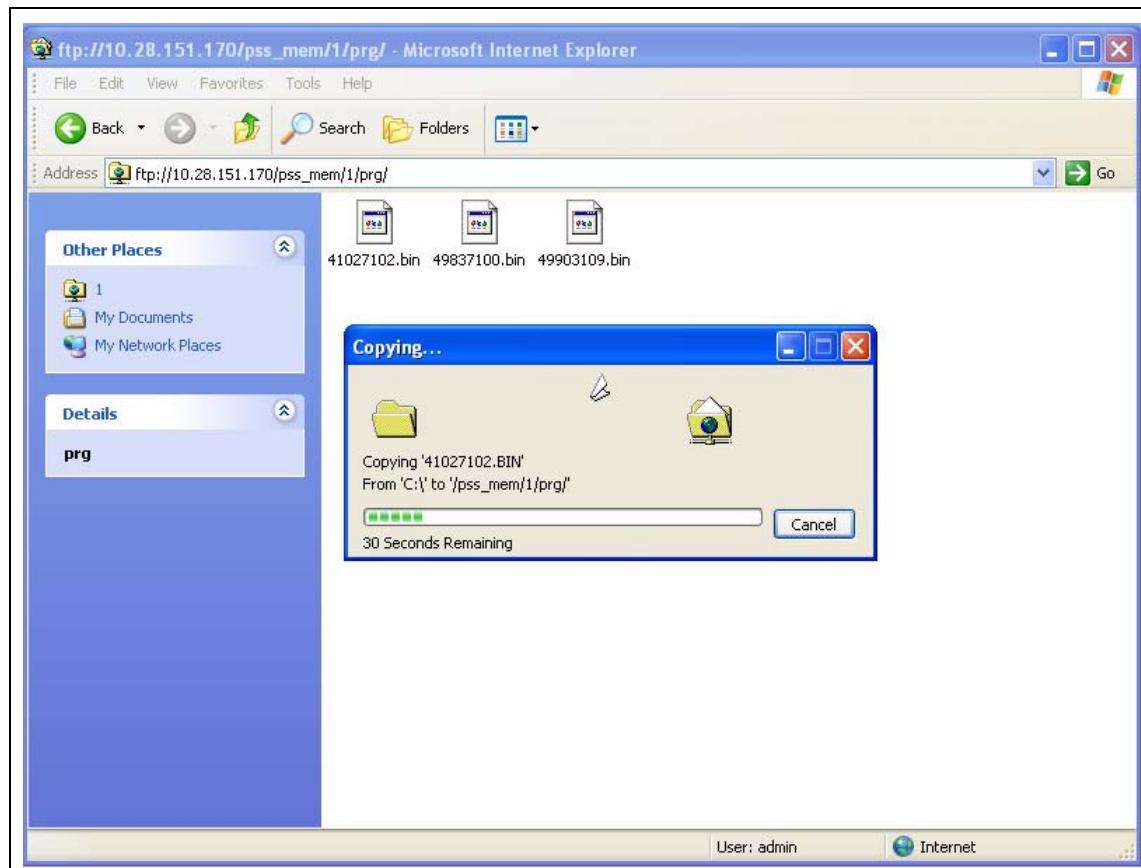
Once the file has been copied, the new application will be activated and a master reset of the PAM 5000 is automatically performed.

Once the master reset is complete, the boot mode LED should be off and the application mode LED should be flashing. The new software version number will be displayed on the PAM Local Service Panel LCD display.

16 Close the browser window, exit Windows, shut down your laptop and disconnect your cables.

Note: It is possible to upload software to the PAM 5000 using FTP. This can be done using different FTP tools, such as DOS FTP, FTP Clients or a browser. In this example, an Internet Explorer IE 7.0 browser is used.

Operation (Menu 3)

PAM 5000 Operation offers the possibility to monitor the forecourt status and the option to change the site operation and prices. These functions are not included in PAM replacement, but the forecourt status menus are enabled and can be used for operational status and diagnostics.

The transaction values are not necessarily shown in correct format (decimal setting), so the information should be used for reference only.

Transaction Monitor (Menu 3.3.1)

Transactions from each fueling point can be monitored using the Transaction Monitor until they are paid out by the POS. Transactions displayed in red are those that completed with an error. The error has either been generated by the PAM 5000 or sent from the pump [refer to , for error details].

Figure 4-41: Web Page (menu 3.3.1) Transaction Monitor

Fueling point information used in the Transaction monitor:

The "SmId" refers to a fixed internal Service Mode ID used for all transactions. Self service and Card transactions will have the same Service Mode ID in the PAM 5000.

Transaction Log (Menu 3.3.2)

The Transaction Log displays the last 10 transactions completed through the PAM 5000. Transactions displayed in red are those that completed with an error. The error was either generated by the PAM 5000 or sent from the pump [for error details, refer to "Device Errors, Recent (Menu 5.1.2.1)" on page 76].

Figure 4-42: Web Page (Menu 3.3.2) FP Transaction Log with Last Transactions

Fueling Point information used in the Transaction Log:

Number	Date & Time	FP	Money	Volume	Price	Grade	SmId
0013	2007-06-22 18:10	1	000790	000389	2021	GRADE 02	11

The "Number" refers to an internal PAM 5000 transaction sequence number that is generated at the beginning of all transactions (also zero transactions).

The "SmId" refers to a fixed internal Service Mode ID used for all transactions. Self-service will have the same Service Mode ID in the PAM 5000.

Operational Status (Menu 3.7)

The Operational status displays the status for all forecourt devices configured on the station. This is a tool for diagnostics or for monitoring the forecourt. In the PAM 5000, it is possible to monitor pump and POS operation status, fuel prices, and last transaction. The number of pumps in the Operational Status (24 or 36) depends on the PAM-related setup in PAM 5000 Web menu 2.5. The number of pumps (24 or 36) will be displayed even if the pump is configured from the POS. They will then have an "Offline" status.

The Operational Status is based on DOMS POS protocol main status but can be compared with the PAM protocol. A "Conversion" table and POS status is described in "Pump Status Conversion Table" on page 71.

Figure 4-43: Web Page (menu 3.7) Operational Status (Quick View)

View Options

There are different view options that can be selected in the Operational Status.

View	Functionality
Refresh	Manual Refresh of the window.
New Window	Option to open a new browser window with the Operational Status.
Site Name	The PAM Name will be presented above the Operation Status (for example, "PAM Replacement").
Quick	Basic information of the forecourt pump and POS that is being used. Window is refreshed automatically (default 10 seconds).
Fueling Point	Detailed information of all Fueling Points. Window is refreshed automatically (default 10 seconds).
POS	POS status. Window is refreshed automatically (default 10 seconds).
All	Detail Forecourt of all configured devices. The window is not refreshed automatically.

Pump Status

Figure 4-44: Web Page (menu 3.7) Operational Status (Quick View Fueling Point)

Status	Refers to "Pump Status Conversion Table" on page 71.
Fueling Data/Transaction Buffer	This status field will display "Real time" fueling data or the finished transaction, including the Grade Name.

Figure 4-45: Web Page (menu 3.7) Operational Status (Fueling Point)

Fueling Point Status	Description
Error	Fueling Point error code. Pump errors will be automatically cleared in the PAM 5000
Fueling Data /Transaction Buffer	This status field will display "Real time" fueling data or the finished transaction including the Grade Name.
Last Transaction	The Fueling Point's last transaction will be displayed in this field.
Service Mode	Fueling Point current service mode. Default for PAM Replacement is "Self Service (11)".
Price Group	Fueling Point current price Group ID. Default for PAM Replacement is Price Group "1".
Grades	Fueling Point configured Grades and "Cash" and "Credit" prices. Grade ID refers to PAM POS protocol system Grades 1-64.

Pump Status Conversion Table

Operational Pump Status	PAM Protocol Status	Description
Offline	Offline (code 0)	Pump not online with PAM 5000
Idle	Offline (code 0)	Pump data retrieving not completed
Idle	Idle (code 1)	Pump online with nozzle down
Starting	Busy (code 2)	Pump started but no fueling data received
Fueling	Busy (code 2)	Pump started and fueling data received
Calling	Offline (code 0)	Pump data retrieving not completed
Calling	Call (code 5)	Pump nozzle/handle lifted
Preauthorize	Authorized (code 9)	Pump authorized from POS
Unavailable w/transaction data	Eot (code 3)	Unpaid transaction
Unavailable	Eot/Idle (code 3 or 1)	Status between clear transaction the pump returns to Idle
Unavailable	Idle (code 1)	Pump not configured (check if any prices)
Unavailable and Calling	Call (code 5)	Pump not configured (check if any grades and prices)
Unavailable and Calling	Call (code 5)	Status between clear transaction and the pump is in Calling
Closed	Closed (code 6)	Pump closed from POS
Error	Not supported	Shortly displayed at pump error. Pump error is automatically cleared by PAM 5000
E_Stopped	Stop (code 8)	Pump stopped by POS or POS offline during fueling

POS Status

Figure 4-46: Web Page (Menu 3.7) Operational Status (POS)
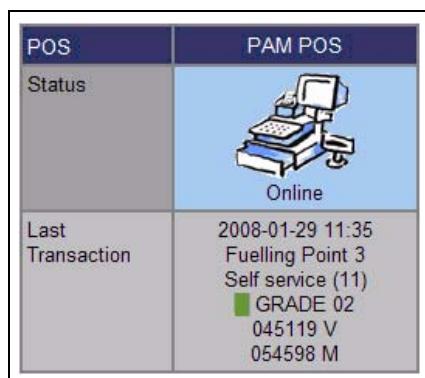
Parameter	Description
Status	POS "Online". POS is not shown if PAM POS is offline.
Last Transaction	The last Fueling Point transaction paid by the POS with detailed information of date, time and transaction data.

Reset (Menu 4)

The Reset menu can be used to perform three different resets of the PAM 5000. Under normal operation, only "Soft Reset" and "Master Reset" will be necessary, as the Super Master Reset option will clear the entire memory and set the board back to factory settings.

Soft Reset (Menu 4.1)

Activating the Soft Reset will have the same effect as a short power off. The system stops for a short period and re-initializes the hardware and communication drivers, but the state of the operation starts from where it was stopped.

Figure 4-47: Web Page (Menu 4.1) Soft Reset
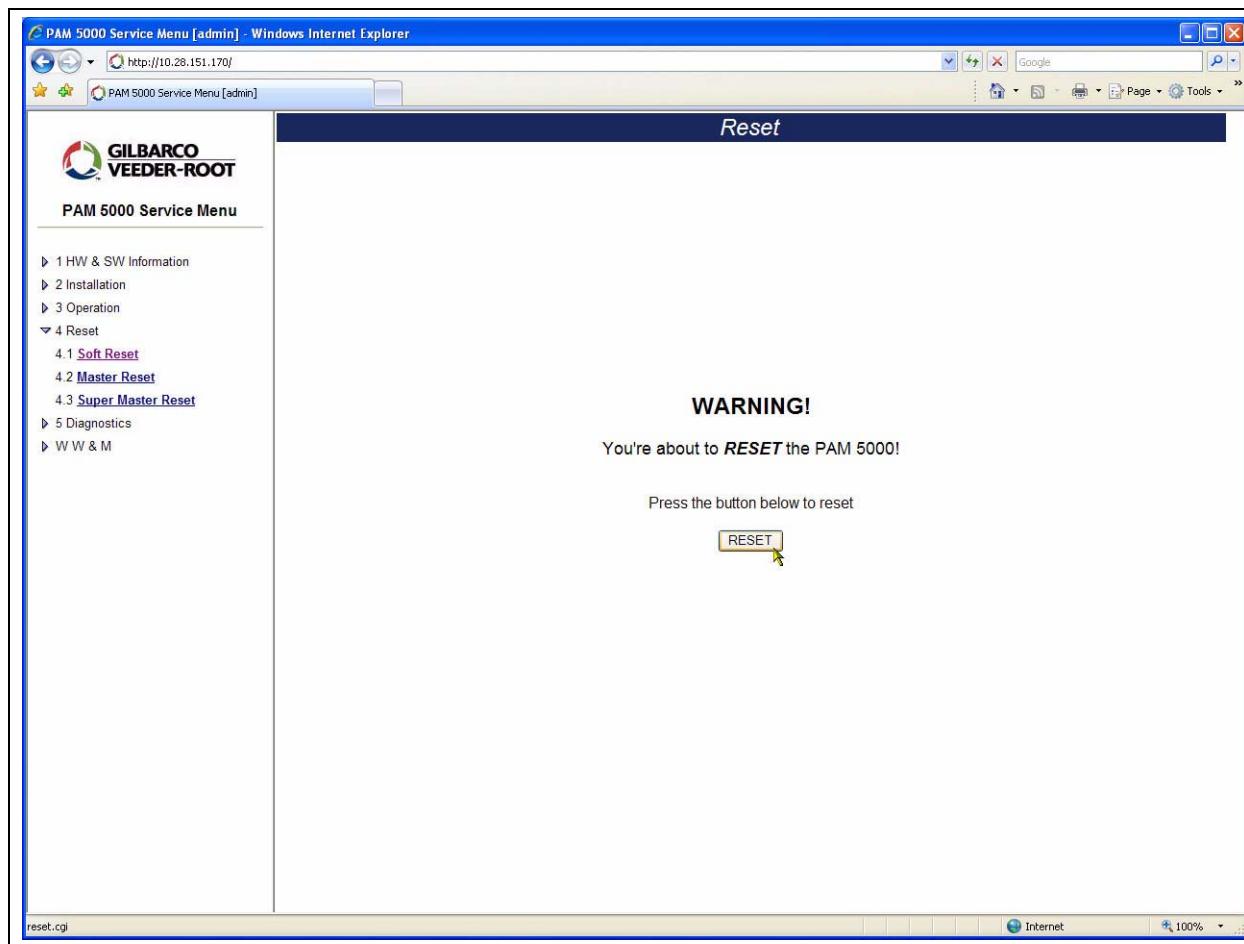
To perform a reset via the Local Service Panel, go to menu 4.1 and press the <**RIGHT**> button.

SOFT RESET 4.1	↔	SOFT RESET? YES
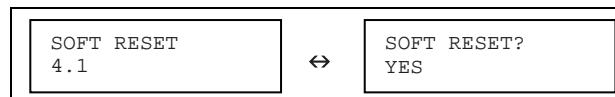
Then press **OK** and the system will perform a Soft Reset.

Master Reset (Menu 4.2)

A Master Reset will clear the configuration data for the application. For example, configuration data for Fueling Points.

Select "Yes, I want to perform a master reset" and click **MASTER RESET** to perform a Master Reset of the PAM 5000.

Figure 4-48: Web Page (Menu 4.2) Master Reset
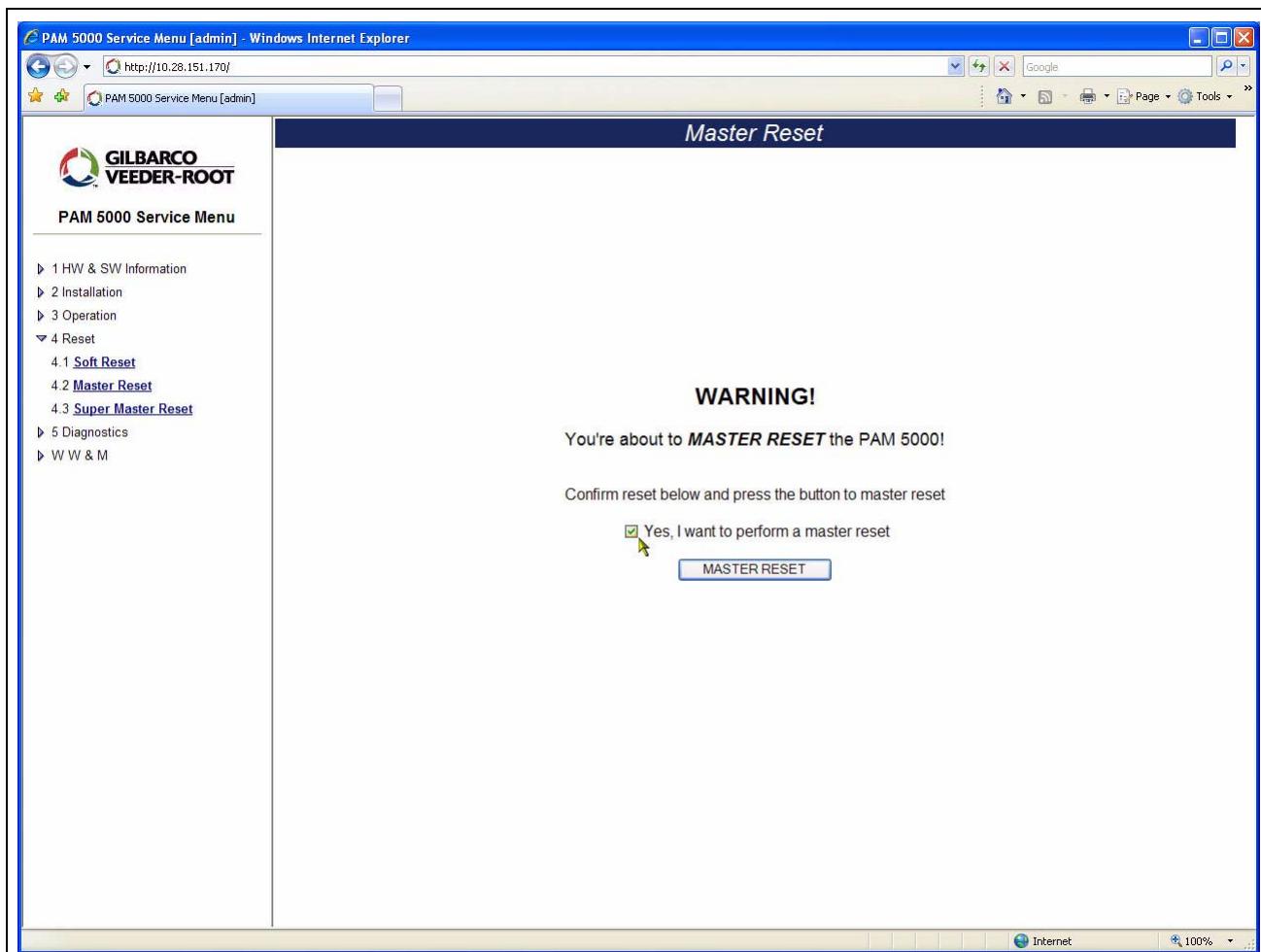
To perform a Master Reset via the Local Service Panel, go to menu 4.2 and press the <**RIGHT**> button.

```
MASTER RESET          MASTER RESET?
4.2            ↔      YES
```
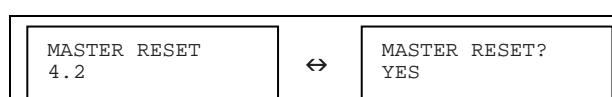
Then press the <**OK**> and <**UP**> buttons for 10 seconds until the display shows "OK MASTER RESET..."

Note: All pump configuration and unpaid transactions will be cleared at Master Reset.

Super Master Reset (Menu 4.3)

The Super Master Reset clears all memory and resets the PAM 5000 back to factory settings.

Type "**ACCEPT**" and click **SUPER MASTER RESET** to perform a Super Master Reset of the PAM 5000.

Figure 4-49: Web Page (Menu 4.3) Super Master Reset
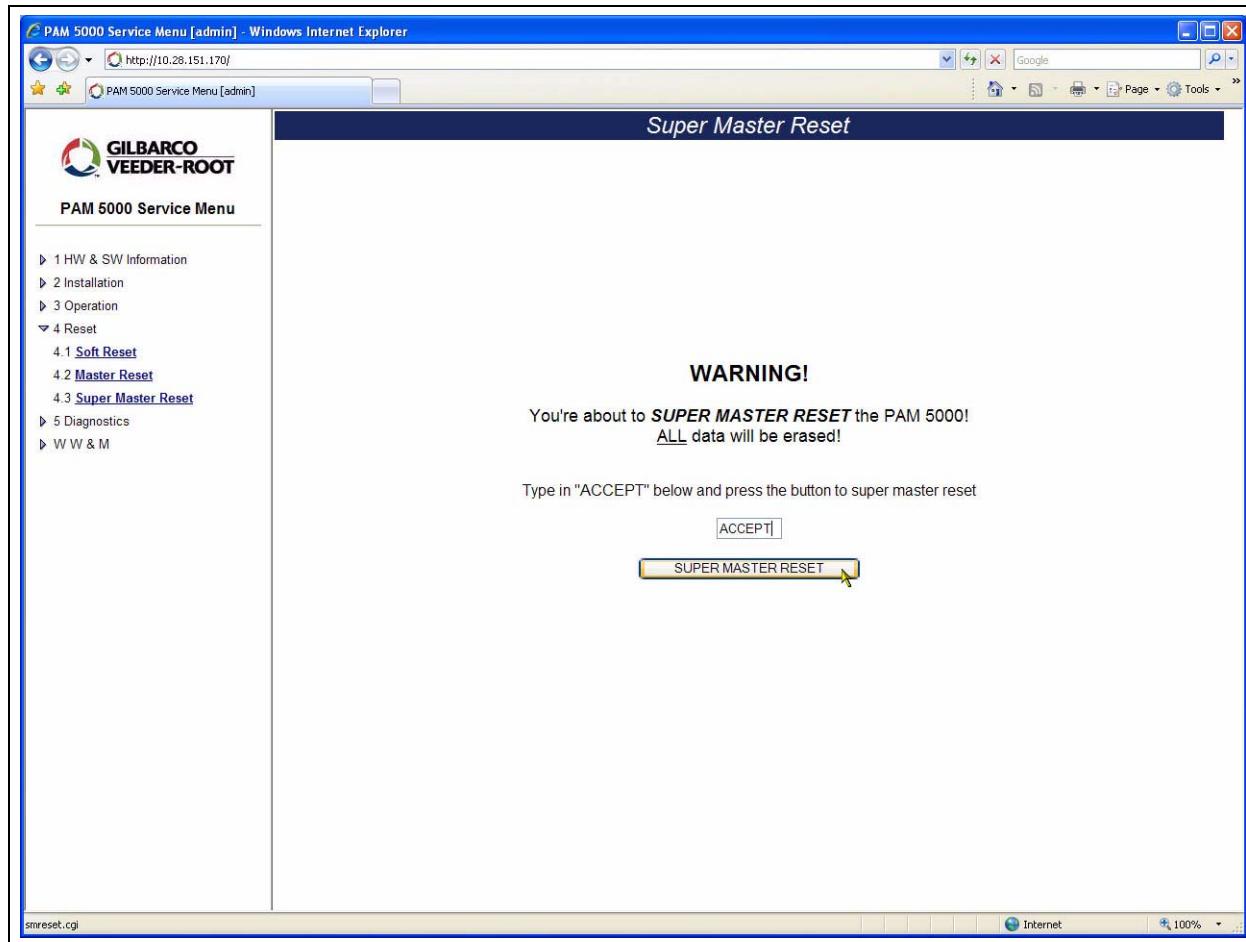
To perform a Super Master Reset via the Local Service Panel, go to menu 4.3 and press the <**RIGHT**> button.

SUPER M RESET 4.3	↔	SUPER M RESET? YES
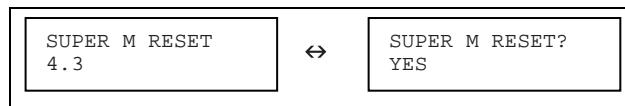
Then, first press the <**OK**> button and then <**OK**> + <**UP**> buttons for 10 seconds until display shows:

S.MASTER RESET RAM TEST	→	S.MASTER RESET RAM: 0.00 %
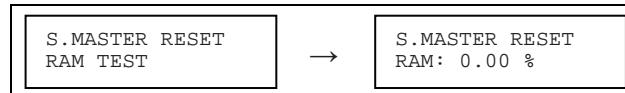
Alternative: Press <**OK**> + <**UP**> buttons at power up of the PAM 5000.

The Super Master Reset procedure will take around 40-50 seconds.

Note: All configuration data and PAM 5000 parameters such as Port assignments and System name will return to their default values. The IP address parameters will survive a Super Master Reset.

Diagnostics (Menu 5)

The Diagnostic menu offers different options to monitor and perform communication traces of devices connected to the PAM 5000. This menu can be used by service personnel locally or for remote diagnostics.

Forecourt Devices (Menu 5.1)

Online List (Menu 5.1.1)

The Online List is used to monitor the devices physically connected to the PAM 5000 on each PAM PORT. It can be viewed at installation or during service to verify if the pump or POS communicates correctly with the PAM 5000. In PAM 5000, it is supported for "PAM" POS and Fueling Points.

Figure 4-50: Web Page (Menu 5.1) Device Online List

To use the PAM 5000 Online List via the Local Service Panel, go to menu 5.1.1 and press the <**RIGHT**> button.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────┐            ┌──────────────────────┐          │
│  │ ONLINE LIST          │     ↔      │ ONLINE DEVICES       │   Scroll ↕ to select Port. │
│  │ 5.1.1                │            │ PORT: 11             │          │
│  └──────────────────────┘            └──────────────────────┘          │
│                                                                       │
│  ┌──────────────────────┐                                             │
│  │ ONLINE DEVICES       │                                             │
│  │ PORT 12: FP 1 2      │                                             │
│  └──────────────────────┘                                             │
└─────────────────────────────────────────────────────────────────────┘
```
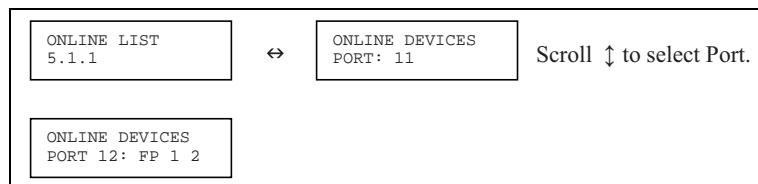
Device Errors, Recent (Menu 5.1.2.1)

The PAM 5000 error log displays the last 10 errors for all the devices. The log is useful to monitor devices, especially if a problem with a certain device has been detected. In some cases, the error can explain the reason for the problem.

Use the link from Recent Device Errors "Error name" to a more specific error description with optional Protocol Error code from the Pump.

Menu 5.1.2.1 shows a list of recent errors detected by the system.

Figure 4-51: Web Page (Menu 5.1.2.1) Recent Device Errors

Using Local Service Panel, go to Menu 5.1.2.1 and then press the <**RIGHT**> button.

```
┌─────────────────────┐        ┌─────────────────────┐
│ ONLINE LIST         │        │ ONLINE DEVICES      │
│ 5.1.1               │   ↔    │ PORT: 11            │   Scroll ↕ to select Port.
└─────────────────────┘        └─────────────────────┘

┌─────────────────────┐
│ ONLINE DEVICES      │
│ PORT 12: FP 1 2     │
└─────────────────────┘
```
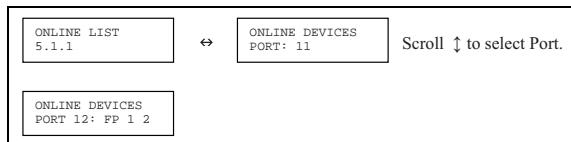
Use the <UP> and <DOWN> buttons to scroll through all the errors.

If no errors are detected, the display will show:

```
┌─────────────────────┐        ┌─────────────────────┐
│ RECENT ERRORS       │        │ 2007-01-02 16:33    │
│ 5.1.2.1             │   ↔    │ FP:1   CODE 22      │
└─────────────────────┘        └─────────────────────┘
```

Device Errors, Specific (Menu 5.1.2.2)
Menu 5.1.2.2 gives access to the last detected error for each individual device. The PAM 5000 only has support for Fueling Point errors referring to the PAM 5000 Application Programs Fueling Point Error Codes. Refer to 410-27-1.xx.SRD for the general error codes and Pump Interface Notes for Gilbarco for Pump Protocol Error information.

Go to Menu 5.1.2.2 "**Specific**", select "**Fueling Point**" and select the Fueling Point ID to check.

Figure 4-52: Web Page (Menu 5.1.2.2) Specific Device Errors

Using Local Service Panel Menu 5.1.2.2 and step though the selection menu with the <RIGHT> button.

```
┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│ SPECIFIC DEVICE │ ↔   │ DEVICE TYPE?    │ ↔   │ DEVICE ID?      │
│ 5.1.2.2         │     │ FP              │     │ 1               │
└─────────────────┘     └─────────────────┘     └─────────────────┘
                                                Scroll ↕ to select Pump ID.

                        ┌─────────────────┐
                   →    │ 2002-01-02 16:44│
                        │ CODE:12   P:    │
                        └─────────────────┘
```

If no errors are detected, the display will show:

```
┌─────────────────┐
│ NO ERRORS       │
│                 │
└─────────────────┘
```
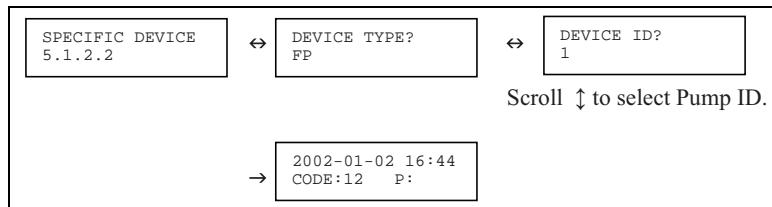
System Logs (Menu 5.2)

Upload Logs (Menu 5.2.1)

The Upload Log can be read via the WEB page or Local Service Panel via menu 5.2.1.

The upload log file location in the PAM Virtual File System is: **/pss_mem/1/sys/bul.txt**. Refer to "Board Upload Log Records" on page B-1 for detailed information about the Upload log.

Figure 4-53: Web Page (Menu 5.2.1) Upload Log
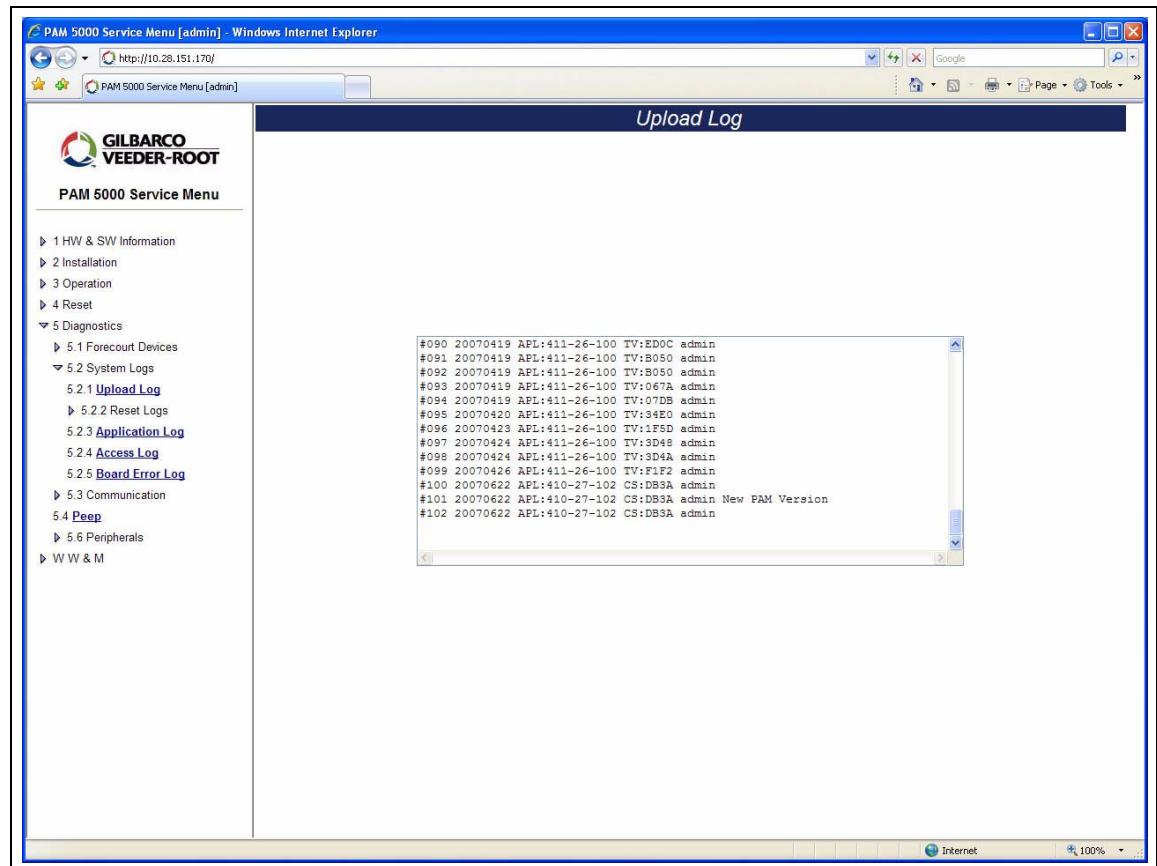
To see the Upload log via the Local Service Panel, go to menu 5.2.1:

```
UPLOAD LOG            ↔   #001 20060503 LAM..
5.2.1                     #002 20060503 APL..
```
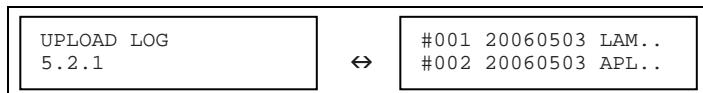
The log can be scrolled both vertically and horizontally using the navigation buttons
(<UP>/<DOWN>, <LEFT>/<RIGHT>).

Press the <**OK**> button to return to menu 5.2.

Reset Log (Menu 5.2.2.1)

The Reset Log can be read from WEB, Local Service Panel via menu 5.2.2. The Reset Log
shows the cause of the reset. This log will be reset at PAM Master Reset.

Figure 4-54: Web Page (Menu 5.2.2.1) Reset Log

Using Local Service Panel, go to Menu 5.2.2.1 and step though the selection menu using the <RIGHT> button.

```
┌─────────────────────┐          ┌─────────────────────┐
│ SOFT RESET LOG      │    ↔     │ MANUAL WEB          │
│ 5.2.2.1             │          │ 2007-01-03 08:58    │
└─────────────────────┘          └─────────────────────┘
```
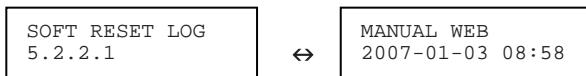
Use <UP> and <DOWN> buttons to view other entries.

Press the <**LEFT**> button to return to menu 5.2.

Super/Master Reset Log (Menu 5.2.2.2/ 3)

The Master Reset and Super Master Reset Logs are similar to the Reset Log, except that only one event can be shown.

The Error Cause "-" will indicate that a new application program has been uploaded, resulting in an automatic Master Reset at start-up.

Figure 4-55: Web Page (Menu 5.2.2.2) Master Reset Log

Using Local Service Panel, navigate to Menu 5.2.2.2 and step though the selection menu using the <RIGHT> button.

```
MASTER RESET LOG          –
5.2.2.2           ↔      2007-01-02 07:18
```
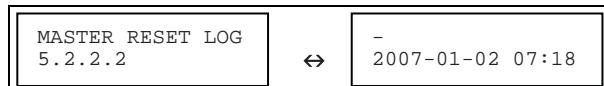
Use the <UP> and <DOWN> buttons to view other entries.

Press the <**LEFT**> button to return to menu 5.2.

Application Log (Menu 5.2.3)

The Application Log can be read via the WEB or Local Service Panel or via menu 5.2.3.

The Application Log is used for various application program issues. For example, "Initialization complete" and program "CRC" error.

Figure 4-56: Web Page (Menu 5.2.3) Application Log

Using Local Service Panel, go to Menu 5.2.3 and step though the selection menu using the <RIGHT> button.

```
┌─────────────────────────┐        ┌─────────────────────────┐
│ APPLICATION LOG         │   ↔    │ Master Reset 200..      │
│ 5.2.3                   │        │ Initialization c..      │
└─────────────────────────┘        └─────────────────────────┘
```

Press the <**OK**> button to return to menu 5.2.

Access Log (Menu 5.2.4)
The Access Log can only be read via the Web.

The Access log displays the date and time, Host IP Address and Protocol (HTTP and FTP).

Figure 4-57: Web Page (Menu 5.2.4) Access Log

Board Error Log (Menu 5.2.5)

The Board Error Log (BEL) displays fatal errors that have occurred on the PAM board.

Figure 4-58: Web Page (Menu 5.2.5) Board Error Log
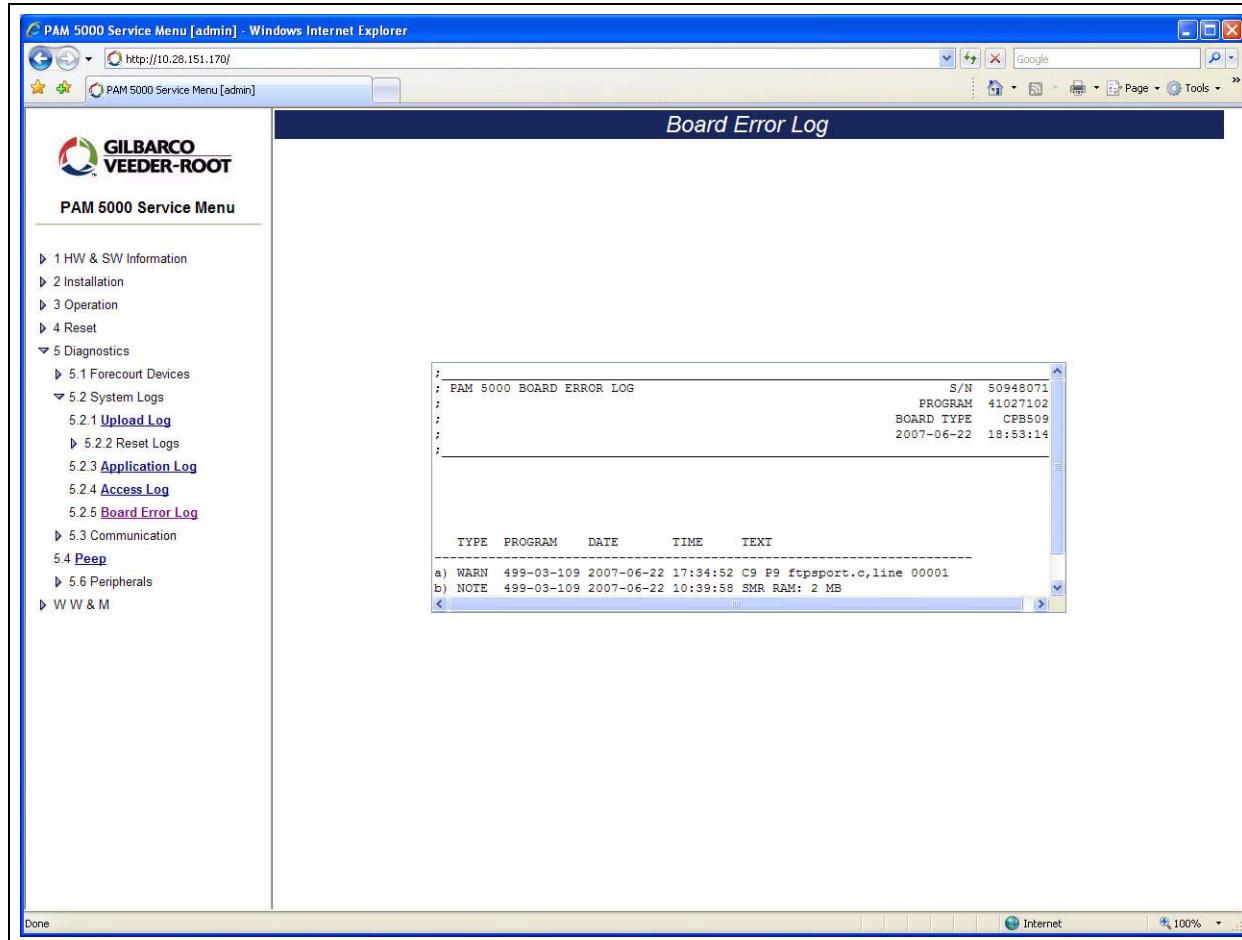
The BEL is not accessible via the Local Service Panel, but only via Web or FTP.

The BEL logs different categories of errors such as Note, Warning and Fatal errors, together with program version, Date and Time and the program output text. This information can be important for error reporting.

The LCD display on the CPB509 board displays the same information as logged in the BEL log file, but the information will be cleared at reset (Soft or Master Reset). The BEL log file will survive a Master Reset and will only be cleared at Super Master Reset.

The upload log file location in the PAM Virtual File System is: **/pss_mem/1/sys/bel.txt** (refer to "Virtual File System" on page C-1).

Communication Statistics (Menu 5.3)

Ethernet (Menu 5.3.1)

On this page, it is possible to monitor network communication. There should not be any "Bad Frames" or "Overruns" in the statistic. If so, it will indicate network problems. It is possible to reset the statistic in order to monitor real-time statistics.

Figure 4-59: Web Page (Menu 5.3.1) Ethernet Statistics

Ethernet Statistics is not accessible via the Local Service Panel; only via Web.

DSB Statistic (Menu 5.3.2)

On this page, it is possible to monitor the communication on the PAM 5000 ports. The statistic displays the TX and RX communication between the PAM 5000 and the connected devices. It is possible to reset the statistic in order to monitor real-time statistic.

Figure 4-60: Web Page (Menu 5.3.2) DSM/DMB Statistics

Protocols (Menu 5.3.3)

Protocol diagnostic can be used for adding protocol features but is not supported in the PAM Replacement Application program.

Peeper (Menu 5.4)

The PAM 5000 has an embedded communication dump facility, which is called a Peeper.

The Peeper can run in two different modes:
- Peep file swap mode
- Peep file incremental mode

Each file can be given an optional file name (default is "peepfile"). The extension is a letter followed by a two-digit sequence number running from 00 to 99.

When running in the swap mode, the Peeper will swap between two file series, "a" and "b" series, that is, peepfile.a00... peepfile.b00... peepfile.a00... until the sequence number is manually incremented by the user by pressing **Skip**. This is typically done when an "interesting" event has occurred. Hereafter, the Peeper will continue swapping between peepfile.a01... peepfile.b01... peepfile.a01... and so on.

When running in the incremental mode, the Peeper will create a continuous series of peep files, where the file extension is "c" + a two-digit sequence number (from 00 to 99). After peepfile.c99, the Peeper will automatically continue with d00... d99... e00... e99... ...z99.

Using a Java Applet started via the system's home page, it is possible to start the Peeper facility, and collect Peeper trace files (peep files) from the PAM 5000 system to the connected PC.

The Peeper Applet has a digital signature from VeriSign® to prove that it is an authentic Gilbarco Java Applet. When the Applet is activated, you will be prompted for the write permissions needed by this Applet, in order to write the peep files to the hard disk.

Figure 4-61: Digitally Signed Peeper Applet Asking for Access Permissions
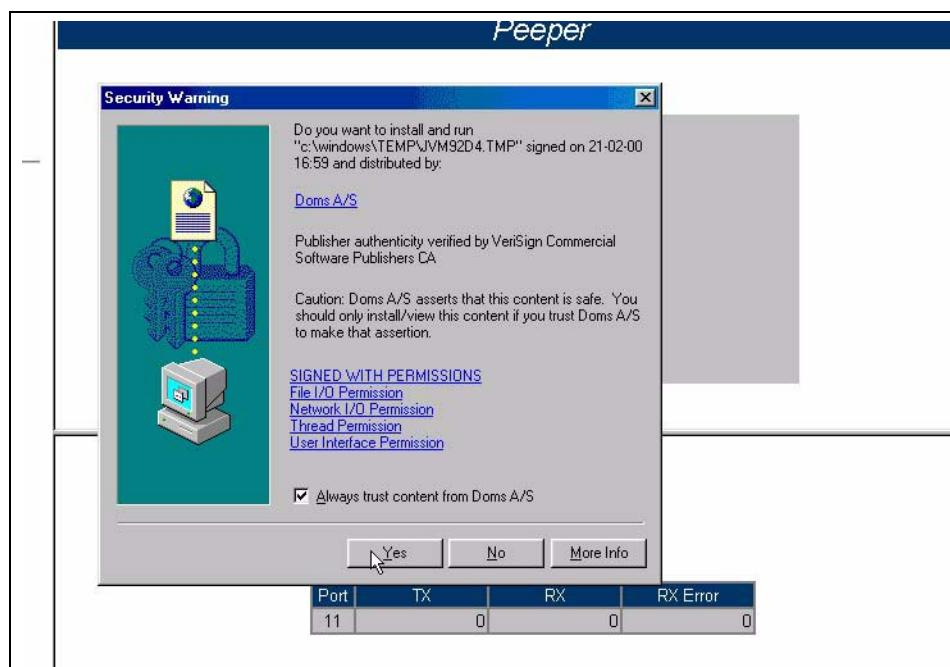
Before the Peeper Applet is started, some information and parameters must be entered.

Figure 4-62: Web Page (Menu 5.4) Peeper Setup
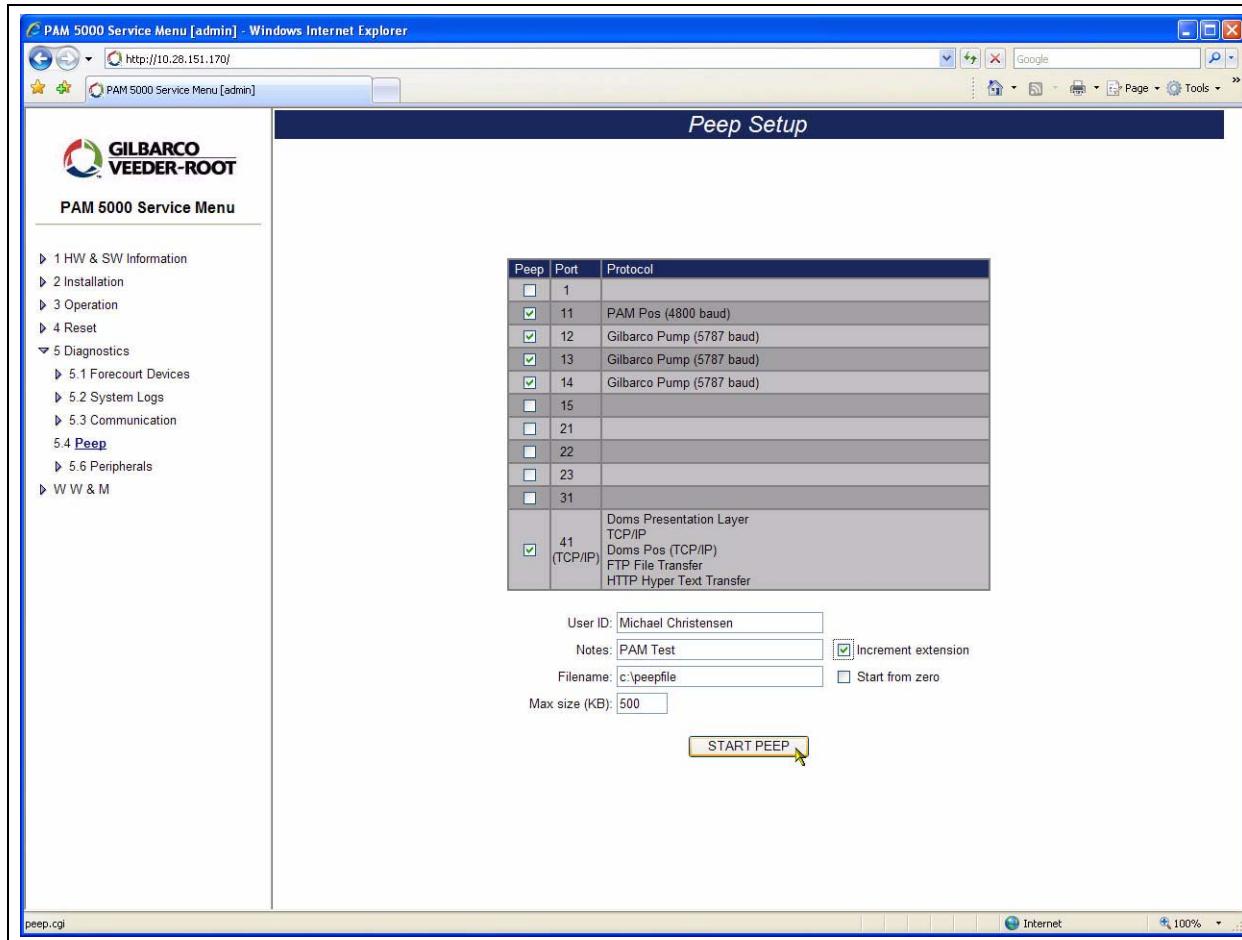
The Peeper setup is as follows:

Field Name	Description
Port setup	Select required PAM Ports that the communication peep must include. Always include the PAM POS port 11.
Notes	Enter a short description of the problem.
Datafile	Enter filename, default is "peepfile". The drive and directory must be specified.
Start from zero	Should normally be set to "No" (Unchecked). If set to "Yes", older dump will be overwritten/deleted at every startup.
Increment extension	If enabled, the Peeper will run in incremental mode. This can be used on sites where the problem occurs occasionally.
Max Size (kb)	The file size for the "peepfile" ranges between 100-9999 Kb. Recommended file size is 1000 Kb.

Select **START PEEPER** to start the Peeper. A new browser window will open, where the Java Peeper applet will be running.

Notes:1) It is recommended to activate all PAM 5000 PORTS in the peep setup, in order to retrieve the correct data.

2) The PC must support Java.

Figure 4-63: Web Page Running Java Peeper Applet, Request for Java User
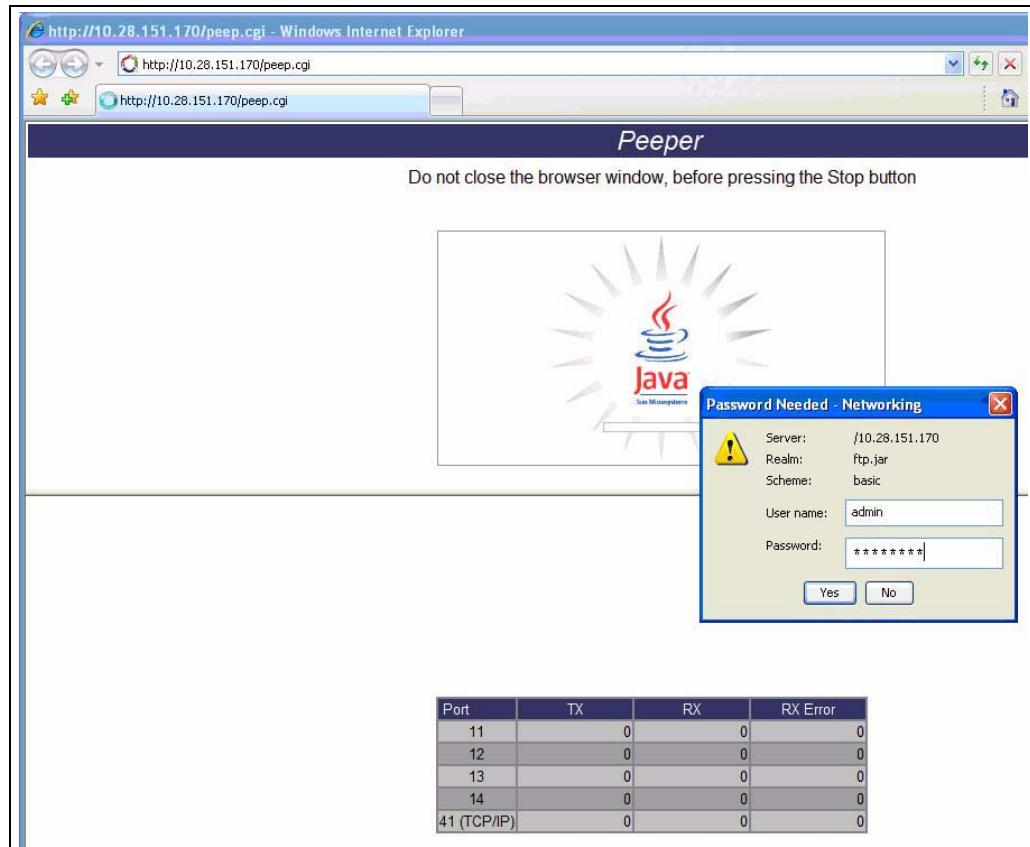
Java applet access requires the same user name and password (privileges) as for the PAM 5000. For details, refer to "Password (Menu 2.4.1)" on page 44.

Figure 4-64: Web Page Running Java Peeper Applet, Start Peeper
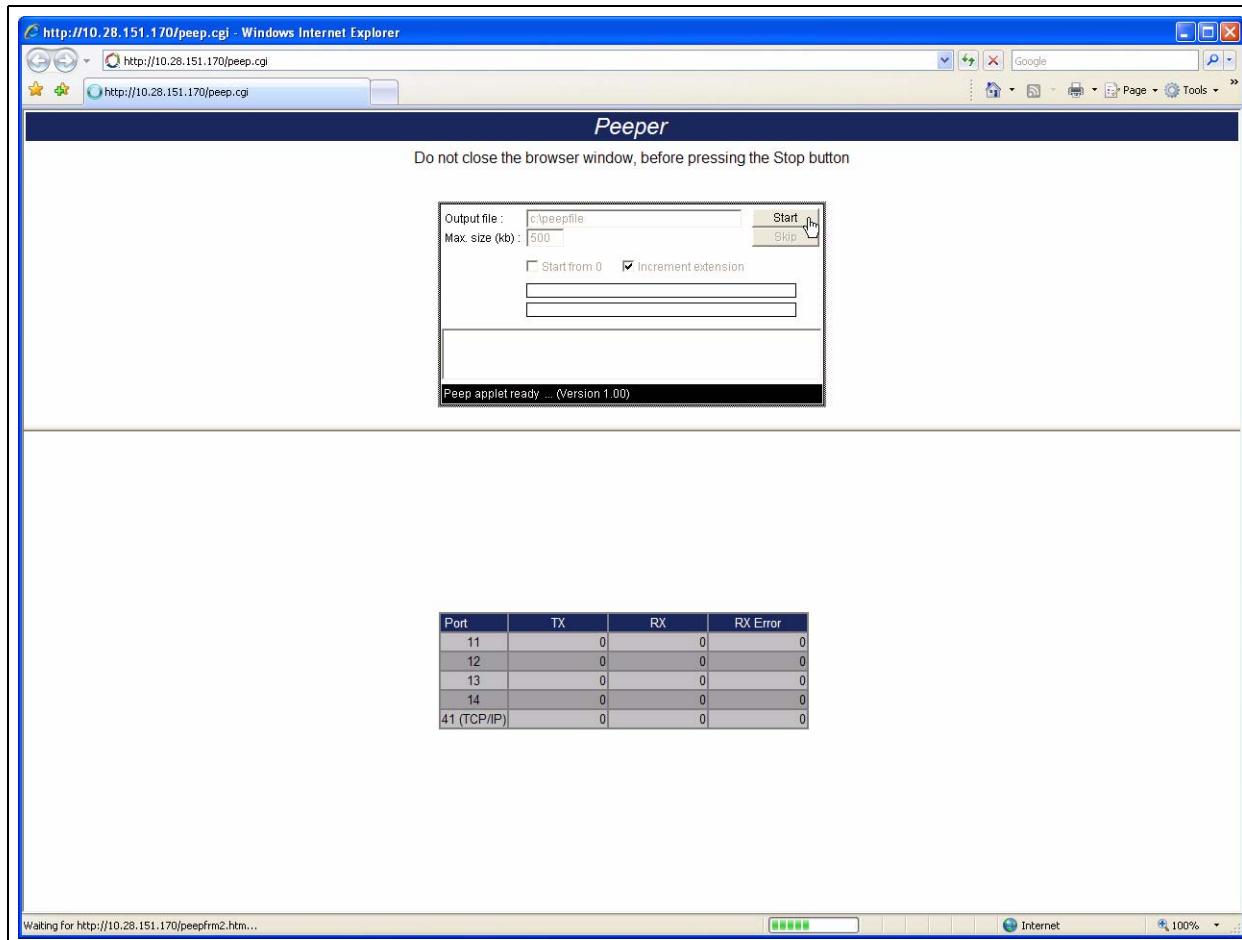
After a while, the data counters should be updated as a result of the ongoing communication.

Figure 4-65: Web Page Running Peeper, Data Collected
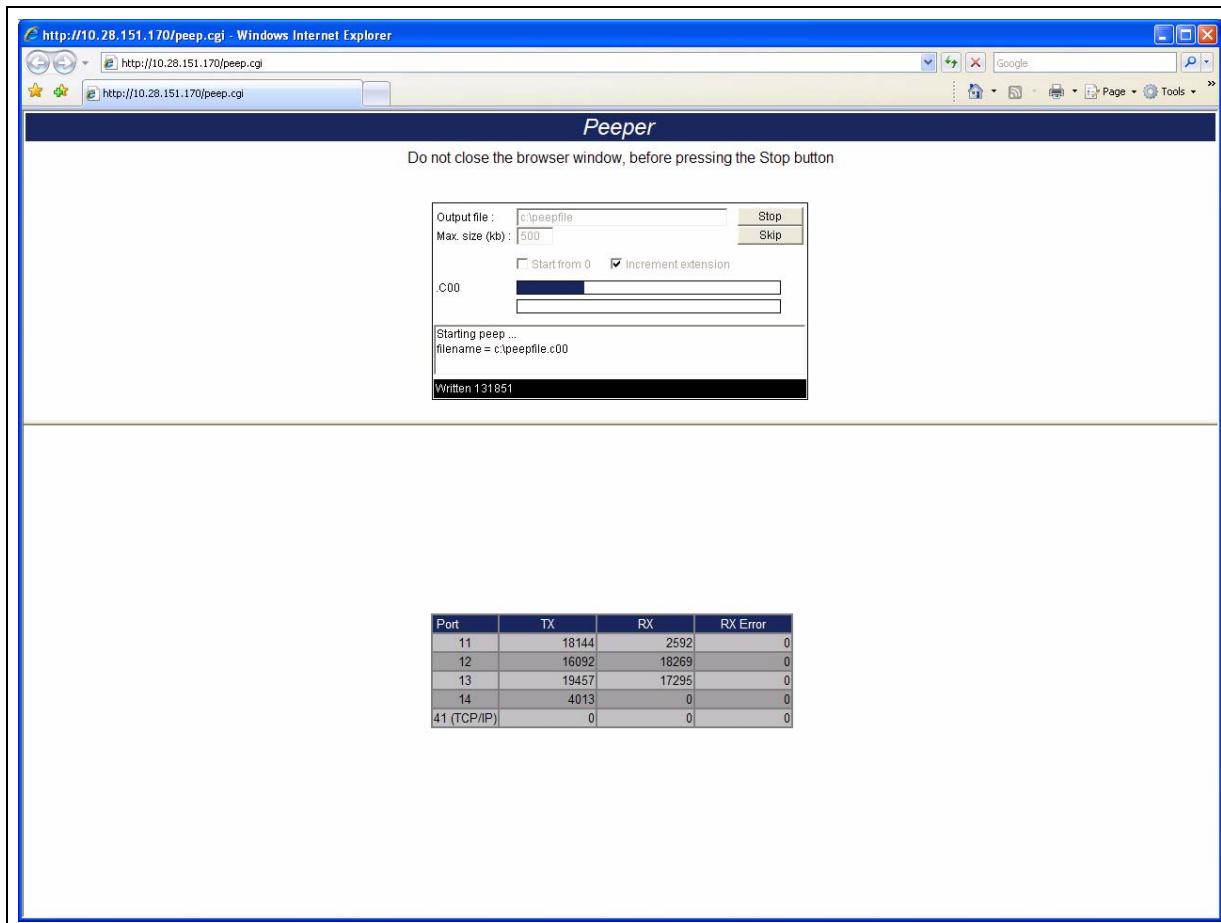
Figure 4-66: Peeper Data Counter Running

Port	TX	RX	RX Error
11	18144	2592	0
12	16092	18269	0
13	19457	17295	0
14	4013	0	0
41 (TCP/IP)	0	0	0

To stop the data collection, press **Stop**. It is also possible to save the running peep file and "jump" to a new one, by using the "Skip" button.

The peep file generated is in an unreadable and compressed format and needs to be translated by a Gilbarco translation tool called "Peepshow". Peepshow will be able to translate the raw peep file to, for example, a Hex or ASCII format text file. In addition to this, it will also be able to convert to protocol translations.

The raw peep file should always be accompanied by a description of what the file includes. Important information is, for example, pump no., type, time and date, the error and how to reproduce it (if possible).

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Appendix A: Web Service Connection

PC and Browser Requirements

Access to Web pages is supported for Microsoft Internet Explorer or Mozilla Firefox. In order to have full access to all PAM 5000 system functionalities, Microsoft Internet Explorer version 4 or higher or Mozilla Firefox 1.5 or higher is required.

The pages are optimized for a screen resolution of 600 x 800.

The PAM 5000 Service Menu can be accessed from an Ethernet connection or via the Service Port (RS-232). They both support the same, except that the communication speed is faster on the Ethernet.

It is recommended that service personnel use the Service Port connection for service because it does not require access to the site's network.

Ethernet Connection

Network Connection

The network connection setup of the board's IP address must be done according to the site's IP address plan.

Access to the PAM 5000 may be controlled by external devices such as routers and firewalls. Consult the Network Administrator.

Direct Connection via Cross Cable

It is possible to connect directly to the PAM 5000 with, for example, a laptop by using an Ethernet cross cable (Q13850-C06). The PC and PAM 5000 need to have the same network range for the IP and Subnet Mask setup.

An example of network settings is shown below:

PAM 5000	PC
TCP/IP: 10.10.10.100	10.10.10.101
SUBNET MASK: 255.255.255.0	255.255.255.0

Service Port Connection

The Service Port uses TCP/IP via PPP, which needs to be configured either for modem connection or null modem connection.

The default setting when shipped from the factory is a null modem connection. The Service Port setup is found in menu 2.3.2.

The default IP of the PAM Service Port is fixed = 11.0.0.90

Null Modem Connection

A Null Modem Connection requires a 9-pin RS-232 "Null Modem Cable". Refer to the wiring specifications at:

http://www.nullmodem.com/NullModem.htm

Establishing a Direct PPP Connection

This section outlines the procedure to establish a direct PPP connection to the PAM 5000 system from a Windows NT®/Windows 98 or Windows 2000/Windows XP machine. To establish a direct PPP connection, do the following,

1 Install null modem driver on the Windows NT/98 machine. A null modem driver is available from the Gilbarco PAM 5000 Development CD-ROM. On Windows 2000/XP machines, a standard built-in communication driver can be used.

2 Connect a PC to the PAM 5000 Service Port using a standard "null modem cable".

3 Dial-up the PAM 5000 from the Windows NT/98/2000/XP machine.

Installing Null Modem on Windows NT/Windows 98 Machines
You need the file "mdmcbxnt.inf" to install null modem on Windows NT machines.

Note: You may skip this section if null modem is already installed.

To install Null Modem on a Windows NT/Windows 98 machine, proceed as follows:

1 Click **Start** on the Windows taskbar.

2 Click **Control Panel** under the "Setting" menu.

3 Double click **Modems**.

4 Click **Add**.

5 Check "Don't detect my..." and click **Next**.

6 Click **Have Disk**.

7   Click **Browse** to select the "mdmcbx.inf" file in case of Windows 98, or the "mdmcbxnt" file in case of Windows NT, and click **OK** after selecting the specified file.

8   The next dialog box that appears should have the modem model "Direct Connection"; select that model and then click **Next**.

9   Select the communication port you wish to use and then click **Next**.

10 Finally, click **Finished** and a modem named "Direct Connection" should now appear in the modems box.

Installing Null Modem on Windows 2000

You do not need any third party Null Modem files (such as mdmcbx.inf) to install null modem on Windows 2000 machines. You can use the "built-in" standard Null modem.

To install Null Modem on a Windows 2000 machine, proceed as follows:

1   Click **My Computer** > **Control Panel**

2   Double click **Phone and Modem options**.

3   Click **Properties > Modems Tab > General**. Set Max Port Speed to 38400.

4   Click **Add**.

5   **Add/Remove Hardware Wizard**.

    Install New Modem:

    Set the Tag: "Don't detect my modem. I will select it from a list".

6   **Add/Remove Hardware Wizard**.

    Install New Modem:

    Manufactures = [Standard Modem Types]

    Models=Communications cable between two computers. Click **Next**.

7   **Add/Remove Hardware Wizard**.

    Install New Modem: Select port (COM1 or COM2).

    Click **Next**.

8 **Add/Remove Hardware Wizard**.

Install New Modem:

Installation completed.

Click **Finish**.

9 Click **OK**.

Installing Null Modem on Windows XP Machines

You do not need any third party Null Modem files (such as mdmcbx.inf) to install null modem on Windows XP machines. You can use the "built-in" standard Null modem.

To install Null Modem on a Windows XP machine, proceed as follows:

1 Click **My Computer** > **Control Panel**.

2 Double click **Phone and Modem options**.

3 Click **Add**.

4 Add Hardware Wizard.

Install New Modem:

Tag: Don't detect my modem. I will select it from a list.

5 **Add/Remove Hardware Wizard**.

Install New Modem:

Manufactures = [Standard Modem Types]

Models=Communications cable between two computers. Press **Next**.

6 **Add Hardware Wizard**.

Install New Modem: Select port (COM1 or COM2).

Click **Next**.

7 **Add Hardware Wizard**.

Install New Modem:

Installation completed.

Click **Finish**.

8 Click **OK**.

Dialing up the PAM 5000 from Windows NT Machines

This section outlines the procedure for dialing up the server on the PAM 5000 board from a Windows NT machine.

To dial up the PAM 5000 from a Windows NT machine, proceed as follows:

1 Double click **My Computer**.

2 Double click **Dial-up Networking**.

3 Click **New** to make a new phone book entry.

4 Enter the name of the new phone entry, for example "PAM Null Modem" and click **Next**.

5 Do not change anything on the "Server" dialogue box. Click **Next**.

6 If more than one modem driver is available, select the "Direct connection" modem and click **Next**.

7 Enter any phone number and click **Next**.

8 Click **Finish**.

9 Click **More** and then click the "Edit entry and modem properties..." item from the submenu.

10 Click the "Server" tab, select only TCP/IP under Network protocols, and disable both software compression and PPP LCP extensions as shown in Figure A-1.

Figure A-1: Dial-up Server Type
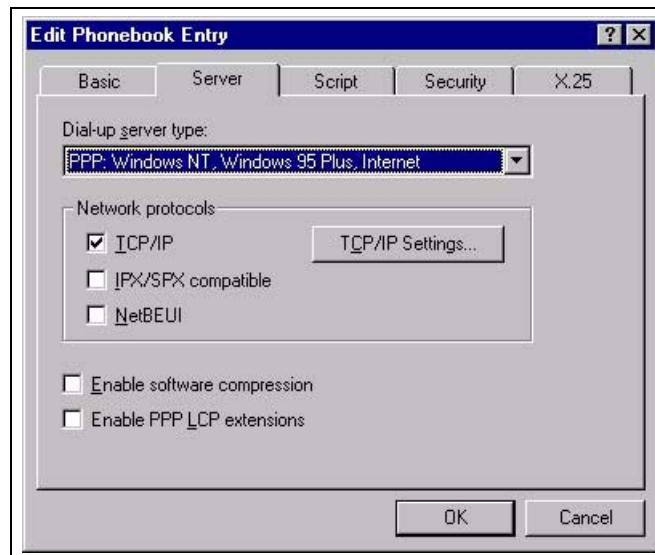
11 Click **Configure**, set the baud rate to 38400 bps, clear all check boxes as shown in Figure A-2 on page A-6 and then click **OK**.

Figure A-2: Modem Configuration
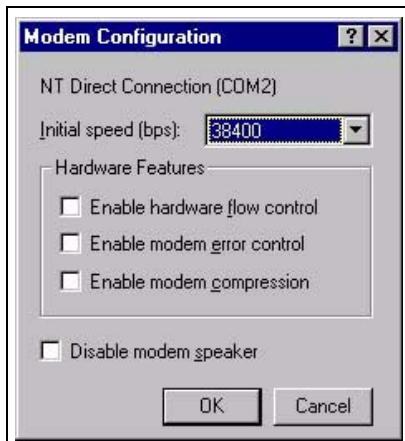
12 Finally, click **OK** on the "Edit Phonebook Entry" dialogue box. You are now ready to dial-up the server on the PAM 5000 board.

13 Check that the null modem cable is connected between the null modem port on your PC and the service port on PAM 5000. Click **Dial** and wait to be connected.

14 Username:[_____]

Password:[_____]

Refer to "Password (Menu 2.4.1)" on page 44.

After successful connection, you can determine the IP address of the PPP interface on the PAM 5000 by following the steps below:

1 Click **More**.

2 Click the "Monitor status..." item on the submenu.

3 Select the "Direct connection" as device if it is not already selected.

4 Click **Details**. The dialogue box shown in Figure A-3 on page A-7 appears. The IP address of the PPP interface is 11.0.0.90, as shown in Figure A-3 on page A-7.
   Note: These IP addresses are set in the PAM and cannot be changed.

Figure A-3: IP Address Information
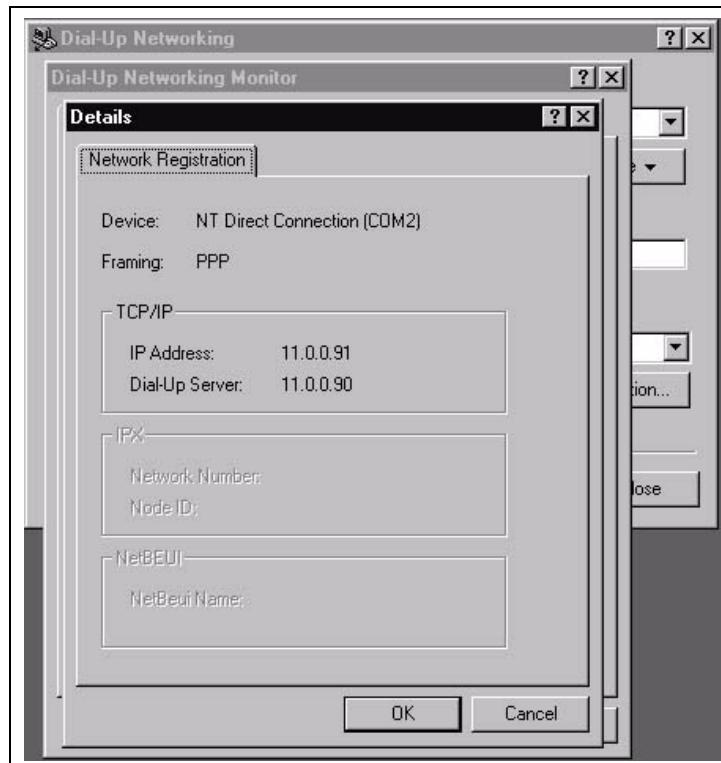
Dialing Up the PAM 5000 from Windows 98 Machines

After installing the null modem successfully, follow the procedure of dialing up the server on PAM 5000 board, from a Windows 98 machine.

To dial up the PAM 5000 from a Windows 98 machine, proceed as follows:

1 Double click **My Computer**.

2 Double click **Dial up Networking**.

3 Click **New DialUp** in order to make a new entry.

4 Enter the name of the new phone entry, for example "PAM 5000" and then click **Next**.

5 Enter any phone number and click **Next**.

6 Click **Finish**.

7 Set Dial Up properties (right click on **Null Modem** icon): ServerType: Check TCP/IP and Windows Logon only. Press **OK**.

8 Click **Configure** for setting Direct Connection Properties. General settings: Set baud rate=38400.

9   DirectConnectionProperties... Connection:
    Advanced connection settings: Disable all control.

10   Click **OK** thrice to close all three tabs.

11   You are now ready to dial-up the server on the PAM 5000 board; check that the null modem
    cable is connected between the null modem port on your PC and the service port on PAM
    5000. Click **Dial** and wait to be connected.

12   Username:[_____]
    Password:[_____]

    [Refer to "Password (Menu 2.4.1)" on page 44].

Dialing up the PAM 5000 from Windows 2000 Machines
To dial up the PAM 5000 from a Windows 2000 machine, proceed as follows:

1   Click **Control Panel** > **Network and Dial up Connections**.

2   Click **Create a new Connection**.

3   Click **Next**.

4   **NewConnectionWizard**: Select... Connect directly to another computer. Click **Next**.

5   **Host or Guest**: Select **Guest** and click **Next**.

6   Select a device:

    - Communication cable between two computers (COM?)

7   **Connection availability**: For all users. Click **Next**.

8   **Connection Name**: PAM 5000. Completing the session: Click **Finish**.

9   **Set Modem properties**: Press **Configure and select Max Speed 38400** (= speed used by
    PAM Service Port).

    - Disable all Hardware controls.

    - Click **OK**

10   **Set Networking properties**: Only TCP/IP.

You are now ready for dialling the PAM 5000 via the Service Port.

1   Check if the null modem cable is connected between the null modem port (COMx) on your PC and the service port on PAM 5000.

2   Click **Start** > **Settings** > **Network and Dial-up Connections** > **PAM 5000**.

3   Click **Connect**.

Dialing up the PAM 5000 from Windows XP Machines
To dial up the PAM 5000 from a Windows XP machine, proceed as follows:

1   Click **Control Panel** > **Network and Dial up Connections**.

2   Click **Create a new Connection**.

3   Click **Next**.

4   **Connection Type**: Select **Set up an advanced connection**. Click **Next**.

5   **NewConnectionWizard**: Select... Connect directly to another computer. Click **Next**.

6   **Host or Guest**: Select Guest and click **Next**.

7   **Connection Name**: PAM 5000.

8   Select a device:

   - Communication cable between two computers (COM?)

   - Set Modem properties: Press Configure and select Max Speed 38400 (= speed used by PAM Service Port).

   - Disable all Hardware controls.

   - Click **OK**.

   - **Set Networking properties**: Only TCP/IP.

9   **Connection availability**: Anyone's use. Click **Next**.

10   **Completing the session**: Click **Finish**.

You are now ready for dialing the PAM 5000 via the Service Port:

1 Check if the null modem cable is connected between the null modem port (COMx) on your PC and the service port on PAM 5000.

2 Click **Start** > **Settings** > **Network connections** > **PAM 5000**.

3 Click **Connect**.

Appendix B: Board Upload Log Records

A specific Board Upload Log resides in a dedicated FLASH area, which cannot be erased.

The log contains a chronological list of all uploads of program code (Applications and Legal Authority Modules) to the processor board.

The log format is specified below:

#NNN YYYYMMDD CCC:TTT BB VVV CS=CCCC U..U O..O

Symbol	Description	Format
NNN	RecordSeqNo, starting from 0	Decimal
YYYYMMDD	Record date	Decimal
CCC	Program Category "LAM" or "APL"	ASCII
TTT	Program Type	Decimal
BB	Program branch	Decimal
VVV	Program version	Decimal
CCCC	Program Checksum	Hex
U..U	Upload User Id	ASCII
O..O.	Optional data	ASCII

Example of part of the upload log file:

```
#103 20061218 APL:410-27-1.xx TV:FFFA admin
#104 20061219 APL:410-27-1.xx TV:FFFA admin New PSS version
#105 20061220 APL:410-27-1.xx TV:FFFA admin New PSS version
#106 20061220 APL:410-27-1.xx TV:30E0 admin
```

On the Local Service Panel, only a 2 x 16 character section can be displayed, but this "window" can be moved around using the navigation buttons.

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Appendix C: Virtual File System

The Virtual File System

Virtual files can be retrieved or viewed from the PAM 5000 using any FTP client. The files can be viewed using any ASCII text editor.

The files are useful for PAM 5000 specialists, but can be requested from Gilbarco's Support Department for further investigation (in special cases).

Detailed file explanation is omitted as changes and data setting(s) are controlled over the PAM 5000 Web Interface.

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Appendix D: PAM 5000 Quick Start-up

PAM 5000 Web Service Facilities

If local or remote access is required over the network, TCP/IP parameters must be configured in accordance with the IP address plan for the location. Consult your Network Administrator regarding this subject, in order to avoid conflicts with other network devices.

Default PAM Setup in Application Version 410-27-X.XX

Web menu 2.1 Protocol To Port Assignment (P2p only changeable over Web connection): PORT 11: PAM POS baud rate = 4800

Via Local Service Panel, PAM POS baud rate speed is changeable in combination with Application Setup (menu 2.5).

Menu 2.3.1 TCP/IP Setup, IP: 10.10.10.100, Subnet: 255.255.255.0, Gateway: 10.10.10.1

Service port, the default IP of the PAM Service port (RS-232) is fixed 11.0.0.90 (refer to "Service Port Connection" on page A-2).

Menu 2.5 Application Setup/PAM Related setup (Web or Local Service Panel (LSP)):
Fueling Positions = 24
De-Authorize Timer = Disabled
Buffered Price Mode = Enabled
Prices Only to IDLE FPs = Disabled
12 Pumps per Port (Disabled = 16 Pump per Port) = Disabled
Delay from POS communication Loss to Pump Stop = 5 seconds

Quick Start-up and Checking Online Devices

Mount the PAM 5000 box at the required location. For more information regarding mounting, refer to MDE-4676 PAM 5000 Installation Manual.

Wire the PAM POS to DSB 500 module, RS-232/422/CL selectable wiring (refer to MDE-4676 PAM 5000 Installation Manual).

Wire the GVR pumps (or GVR D-Box) to the DSB 492 module (45 mA CL), maximum of one device per connector (Single or one Dual electronic). Port12 = Fp 1-16, Port 13= Fp 17-24 (default) (refer to MDE-4676 PAM 5000 Installation Manual).

Turn on power to the PAM 5000.

For the PAM 5000, if local or remote access to the service facilities is required over the network:

- **View/Set the IP address using the Local Service Panel**: Press **Up** to enter the Service menu, navigate to menu **2. Installation** > **2.3 Communication Setup** > **2.3.1 TCP/IP Setup**, scroll up/down/right to set required segments for IP, Subnet Mask, and Default Gateway. Save the settings by clicking **OK**, and **OK** once more to reset the PAM and the new IP address is activated.
- **Check if the PAM can be accessed over TCP/IP**: Start a command prompt on a PC connected to the same LAN/Network (or Cross over cable), type **ping xxx.xxx.xxx.xxx** (where x=PAM IP address). If you receive a ping reply from the PAM 5000, open a web browser and type the PAM IP address in the browser's address bar: http://xxx.xxx.xxx.xxx. A "Connect to…." window appears. Type in the username and password required.
- **When a PC is connected to the PAM 5000 web service facilities**: The following changes and online checks can be monitored directly in the browser using the same menu numbers.

Note: Change PAM related setup if you need to change the values from the defaults.

If any change is required, first press **Up** to enter the Service menu. Navigate to menu **2. Installation > 2.5 Application Setup**, make the required change(s), scroll up/down/right and save the settings by clicking **OK**, and **OK** again for Master Reset and to activate new settings.

Check online pumps to PAM 5000 (configured or un-configured)
- Turn power on to the connected pump(s)
- Watch the DSB 492 module connectors, Green LED flashing = TX to all pumps, Red LED flashing = RX from pump.
- Check which pump ID number(s) are detected online on the Local Service Panel (or via Web browser). Press **Up** to enter the Service menu. Navigate to menu **5. Diagnostic > 5.1 Forecourt devices > 5.1.1 Online list**, select the relevant Ports 12, 13 or 14. Observe as the display scrolls to display the connected pump IDs that are detected as online.

Check POS online to PAM 5000 (configured or un-configured)
- Watch the DSB 500 module, PAM POS is the master, Blank: Green TX before RX from POS. Green LED flashing = TX to POS, Red LED flashing = RX from POS.
- Check if the POS is detected online on Local Service Panel (or via Web browser). Navigate to menu **5. Diagnostic** > **5.1 Forecourt devices** > **5.1.1 Online list**, select Port 11. Observe as the display scrolls to display the "POS 1" when it is detected as online.

With the optional CRIND kit added into the system, only visual checking of POS and CRIND communication is possible (PAM 5000 control is not involved).
- Watch the DSB 500 (POS) and DSB 492 (CRIND) modules, PAM POS is the master. Principle, DSB 500 Red LED flashing = RX from POS converts to DSB 492 Green LED TX = Transmit out to the CRIND.
  When the CRIND replies, DSB 492 Red LED flashing = RX from CRIND, converts back to DSB 500 Green LED TX = Transmit out (back) to the POS. Red/Green flashing frequently on both modules indicates communication between POS/CRINDs.
- No online check is available over the PAM 5000

Check in parallel, the current Forecourt status with a PC connected to the PAM 5000 Web Server.
  • Navigate to menu **3. Operation** > **3.7 Operational Status**. This page displays the current status, and refreshes every 10 seconds.
  • Click the "Fueling Point" link on top. A new page appears, with more details, such as FP status, Price group, Grades, Fueling data, Last transaction.

Send forecourt configuration from PAM POS.

Check if all pumps can start and prices for each grade/product are correctly displayed.

The PAM 5000 system should be ready for use.

Continue with other required checking procedures before handing over the system.

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Appendix E: Accessing the PAM 5000 Internal Menus

General Information

This section highlights useful hints regarding use of the PAM 5000 service pages to view current status or locate possible malfunction(s), either from a remote location, or with a technician present onsite.

This section is aimed to help technicians or Help Desk executives and assumes that the user possesses:
- Basic knowledge on how to access and navigate through the PAM 5000 web menus.
- Knowledge on how to navigate through the PAM 5000 embedded Local Service Panel/display.
- User knowledge about standard PC technologies such as Windows and Internet browsers such as Microsoft Internet Explorer or Mozilla Fire Fox.

All PAM 5000 Service and diagnostics functions explained in this section can be accessed by:
- Remote location (Help Desk) if there is a network connection to the fuel site and PAM 5000.
- Local service PC with access to the LAN network, or RJ-45 Crossover Net cable (or RS-232 via Null-modem cable) connected directly to the PAM 5000.
- View/change settings with use of the integrated Local Service Panel and Display (with some limitations), same menu numbers as for Web navigation.

With a technician present onsite, watching the Hardware Interface Module LEDs combined with readout(s) helps locate malfunctioning device(s).

Accessing the PAM 5000 Common Menus for Service/Diagnostics via Laptop

The PAM 5000 has a variety of menus available to program, monitor or diagnose PAM operation. Some of the more frequently used menus are listed below. Refer to the appropriate sections of this manual, for detailed coverage of these and other available menus.

Menu	Function
Menu 1.1	Display PAM s/w version number (application program)
Menu 2.1	Set POS baud rate
Menu 2.2	Set date & time
Menu 2.4.1	Change passwords (optional)

Menu	Function
Menu 2.5	Set 24 vs. 36 fueling positions
	Enable/disable de-auth timer
	Buffered/non-buffered price mode
	Prices sent to pumps in IDLE or IDLE/CALL
	12 pumps/loop vs. 16 pumps per loop
	Set POS comm time-out to PUMP STOP
Menu 2.6	To upload new PAM software (requires JAVA plugin)
Menu 3.3.1	To monitor transactions
Menu 3.3.2	Transaction log
Menu 3.7	To display status of each fueling position
Menu 4.1	Soft reset (warm start)
Menu 4.2	Master reset (cold start)
Menu 4.3	Super master reset (super cold start)
Menu 5	Diagnostics (comm logging program, Peeper, is menu 5.4)

The PAM 5000 menus are accessible via laptop or via the Local Service Panel (LSP). The LSP is composed of a 2x16 LCD display plus five push buttons for navigation (refer to the appropriate sections of this manual, for use of the LSP).

The instructions below are for laptops running on the Windows XP platform. PC prompts for Windows 2000, Windows Vista or other operating system may be different.

1 Connect an Ethernet crossover cable (Gilbarco part number Q13850-C06 or equivalent) to the Ethernet port on your laptop (or if no Ethernet port is available, use an Ethernet to USB adapter cable and connect the Ethernet crossover cable to a USB port on your laptop). The other end of the crossover cable connects to the external Ethernet port on the PAM 5000 (end opposite the AC power plug).

2 Power up the PAM 5000 and laptop.

3 Right click on "My Network Places" and select "Properties".

4 Right click on the "Local Area Connection x" that accesses the Ethernet port or USB port you are using and select "Properties".

5 Click on "Internet Protocol" TCP/IP and select "Properties".

6 Make sure that the "Use the following IP address" is selected. Make sure the IP Address field is programmed to something OTHER THAN 10.10.10.100, e.g., 10.10.10.101 or 10.10.10.240 (first 3 fields must be 10.10.10). Make sure the Subnet Mask is set to 255.255.255.0. Select "Ok" and close out the Local Area Connection Properties screen and Network Connections screen.

7 Open up an Internet browser window and enter the following IP address: 10.10.10.100.

8 When prompted to connect to 10.10.10.100, type in "admin" for the user name and "password" for the password and select "yes". The "Welcome to PAM 5000" screen should appear.

9   The available menus are located on the left side of the "Welcome" screen.

10   Select the desired tab and drill down to the desired function.

   Example to access the items under menu 2.5
   - Select the "Installation" tab (2.).
   - Select the "Application Setup" tab (2.5).
   - On the Application Setup screen, select:
     - 1 - Forecourt Control Setup
     - 2 - PAM related
   - The Application Setup screen should appear.

Accessing the PAM 5000 Common Menus for Service/ Diagnostics via LSP

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
With the use of Local Service Panel on PAM 5000 (no PC connected).	Local display in normal mode 410-27-1xx 11:38 W&M: ↓ SERVICE: ↑	**Info**: UP, DOWN, RIGHT, LEFT buttons are located on print circuit board CPB509, left of the display.
View/Set	Enter SERVICE menu by pressing the UP button first.	Menu number for Web navigation. Some limitation with use of Local Service Panel.
	Navigate with buttons UP, DOWN, RIGHT, LEFT.	**Action**: During changes, UP or DOWN buttons increment or decrement parameter values, with continual pressing of the button speeding up in/decrement counts.
	Change with UP or DOWN.	
	Save changes with OK button (Enter) and with some menus once more, for acceptance.	
Web access to PAM 5000 Remote or Locally via network • Direct crossover net cable RJ-45 ~ OR ~ • Direct Service port (RS-232)	To access the PAM via an Internet browser, type the IP address HTTP: //xxx.xxx.xxx.xxx (x= PAM 5000 IP address)	**Info**: PAM 5000 supports standard Internet browsers, Microsoft Internet Explorer (> 5.0), Mozilla Firefox (>1.0). Some tools require Java installed on the PC, such as Upload or Peep applet. Default IP address from factory: **IP Address**: 10.10.10.100 **Subnet mask**: 255.255.255.0 **Gateway**: 10.10.10.1 **Action**: Read or Change IP address when needed (read set TCP/IP). Use/connect a local PC within same IP range to access the PAM first time, set the IP address required for the local network.
Application's (1.1) View	Menu navigation: **1. HW & SW Information** > 1.1 Program Versions	**Info**: PAM 5000 Application version number, important to note it when reporting any malfunction(s).

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
PAM POS baud rate speed (2.1) View/Set Default: 4800 baud rate Selectable from 300-19200 baud rate	Menu navigation: **2. Installation** > 2.1 Protocol To Port Assignment Protocol To Port assignment View/Set not available at the Local Service Panel. Via Local Service Panel, PAM POS baud rate speed changeable in combination with Application Setup (menu 2.5).	**Watch**: PORT 11: PAM POS (xxxx baud) **Check**: If the PORT number digit is displayed as 11, current displayed baud rate is active. Change the baud rate if required. If a "*" is marked to the right of the port number, the displayed baud rate settings are NOT activated; proceed to Action. **Action**: If no changes or "*" is shown, leave the menu. Else, click **Save Changes**. A prompt appears with the following text: "Save changes now will Master Reset the PAM!" Click **OK** and Master Reset is executed. After an average of 20 seconds, the system should be running again. POS initialize the PAM with Grade map/prices/Open FP.
Date & Time (2.2) View/Set	Menu navigation: **2. Installation** > 2.2 Date and Time	**Info**: PAM 5000 internal timer used for transaction, error, and (peep) communication traces time stamp. **Action**: Set current date and time, especially before any communication trace (peep) is started; this is helpful when analyzing data.
TCP/IP address (2.3.1) View/Set	Menu navigation: **2. Installation** > 2.3 Communication Setup > 2.3.1 TCP/IP Setup	**Watch**: **IP Address**: 10.10.10.100 (default) **Subnet mask**: 255.255.255.0 (default) **Gateway**: 10.10.10.1 (default) **Action**: Change IP address when needed. Changes made via Local Service Panel for the first time or using a local PC within same IP range to access the PAM for the first time.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
PAM related Setup (2.5) "Soft jumper setting" View/Set 24/36 Fueling positions De-authorize Timer Buffered Price Mode Prices Only to IDLE FPs Pumps per Port(12/16 FPs) Delay from POS comm. Loss to Pump Stop	Menu navigation: **2. Installation** > 2.5 Application Setup Select 1- Setup Group? Forecourt Control Setup 2- Forecourt Application? PAM Related Local Service Panel/Display View/ Set setting(s) available via Local Service panel.	**Info**: List all PAM related settings "Actual setup" column show current active settings. **Check**: If a "*" is marked to the right of any settings in the column "Actual Setup", this setting with the "*" is modified but not activated; proceed to Action. **Action**: If no changes or "*" is shown, leave the menu. Change other PAM related settings if required and click **OK**. Ensure that no FP is fueling. Next step will clear current pump data and require the POS resend configuration to PAM 5000 afterwards. Navigate to PAM 5000 menu **4. Reset** > **4.2 Master Reset** Mark the check box "Yes….", and click **MASTER RESET**. Master Reset is executed. After an average of 20 seconds, the system should be running again. POS re-initialize Grade map/prices to PAM.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
Software Upload (2.6) Change PAM SW. application	Menu navigation: **2. Installation** > 2.6 Software Upload Only available via Web browser over Network, crossover net cable (RJ-45) or direct Service port connection.	**Info**: The web "Software Upload" applet requires JAVA installed on the PC **Action**: For more details, refer to "Software Upload (Java Applet)" on page 55. Prepare Upload. Ensure that no FP is fueling. On POS, Cash out all transactions E-stop all pump. Perform other required processes. PAM 5000 Software upload in short form Mark "Yes", allow software upload. Mark "x" Upload now. Click **ACCEPT**. "Software Upload" JAVA applet window is loaded. If a JAVA prompt appears with request Username/ Password, enter the following for the rights to upload: **Username**: admin **Password**: password Click **Yes**. In the "Software Upload" window, enter the following: **Username**: admin **Password**: password **Path & file**: **c:\41027103.bin** (example) Click **Start Upload**. DO NOT CLOSE THIS WINDOW WHEN UPLOAD IS IN PROGRESS! (approximate 40-60 seconds). If all runs as expected, await the text window's last line to display: "When finished return to PAM 5000 main menu" before you close the "Software upload window". Any changes, such as PAM baud rate speed and PAM related settings survive a Software upload/ change.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
Operation (3.x) View transactions/Status Unpaid FP Transactions Last 10 paid FP transactions ~ OR ~ Operational Status, with Graphic forecourt view of current FP status and last transaction.	Menu navigation **3. Operation** > 3.3 FP Transaction > 3.3.1 Monitor > 3.3.2 Log ~ OR ~ > **3.7 Operational Status**: Operational Status only available via Web browser over Network, crossover net cable (RJ-45) or Service port connection.	**Info**: 3.3.1 Monitor window shows all unpaid transactions. 3.3.2 Log window shows the last ten paid transactions. 3.7 Operational Status, Graphic forecourt view of current status for all devices, also useful for checking actual Grade map and Prices. Operational status can be compared with the PAM protocol, a "Conversion table" is described in "Pump Status Conversion Table" on page 71. **Actions**: Only Readouts, no changes possible. Menu 3.7 Operational Status, select the "Fueling Point" link in the top for more details on each of the FPs.
Reset, MR, SMR (4.x) Perform Reset Master Reset Super Master Reset	Menu navigation: **4. Reset** > 4.1 Soft Reset > 4.2 Master Reset > 4.3 Super Master Reset	**Info**: 4.1 Soft Reset, such as power off/on. All settings survive. 4.2 Master Reset PAM baud rate, PAM related settings, and IP address survives, ALL pump data cleared (Grade map/Prices) 4.3 Super Master Reset Sets PAM 5000 back to factory settings, IP address survives, remote user can re-connect afterwards and continue with changes. **Action**: After one of below: 4.1 Reset, none, POS continues polling 4.2 Master Reset, requires POS re-initialize with sending Grade map/Prices/Open FP 4.3 Super Master Reset, requires check/set if any changes required from factory settings. PAM POS baud rate (menu 2.1 P2p) PAM related settings (menu 2.5 Application Setup) POS re-initialize PAM with sending Grade map/Prices/Open FP.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
Online list (5.1.1) View online status for Fueling Point's/POS	Menu navigation: **5. Diagnostics** > 5.1 Forecourt Devices > 5.1.1 Online List	**Info**: Online devices to PAM 5000 are shown whenever the PAM is un-configured or configured from POS. Port 11: POS 1 "PAM" Port 12: Fp1-16 (default) Port 13: Fp1-16 (POS Fp 17-24 default, and 17-32 w/36 Fp support) Port 14: Fp1-4 (POS Fp 33-36 w/36 Fp support) **Check**: This page refreshes every 5 seconds. Check if devices are stable online, Suggestion: 1. Right click menu **5.1.1 Online list** 2. Select "**Open in new window/tab**". 3. Select the new window/tab and press refresh (**F5**) for update immediately (before 5 seconds auto refresh)
Device Errors (5.1.2.1) View FP Errors	Menu navigation: **5. Diagnostics** > 5.1 Forecourt Devices > 5.1.2 Device Errors > 5.1.2.1 Recent	**Info**: Recent Errors shows the last 10 Errors detected by PAM 5000; some Gilbarco pumps can support error codes. **Action**: If any error is detected, the column "Type" will describe overall error type, column "Name" will show the code(s) from the pump if supported; consult the pump manual for explanation.
Reset log (5.2.2.1) View what cause the reset, Power failure Reset from remote (web) Reset from Local Service panel (Useful for check power drops)	Menu navigation: **5. Diagnostics** > 5.2 System Logs > 5.2.2. Reset Logs > 5.2.2.1 Soft	**Info**: Last 10 Reset reasons are listed. Useful for check of possibly power off/on situations that occurred since last PAM 5000 Master Reset.
Board Error Log (5.3.2) View, internal error log	Menu navigation: **5. Diagnostics** > 5.2.5 Board Error Log	**Info**: Here PAM 5000 will notice internal warning/errors if any detected. This can be helpful information, together with possible malfunction observed. Can be requested by GVR Help Desk.
Communication Statistics (5.3.2) View serial communication statistics with RX Error counter Useful for checking POS and FPs communication line. Possible RX "noise" will be counted as Rx Errors	Menu navigation: **5. Diagnostics** > 5.3 Communication > 5.3.2 DSB/DMB Statistics	**Info**: This page is automatically updated every 5 seconds. **Check**: Watch the column "RX error", if RX Error counter increases frequently, proceed to Action. **Action**: Check all device(s) connected to the port where the "RX Error" counter increases, disconnect one by one until the "RX Error" count stops. Connect one by one to check if other device(s) had communication troubles. If you click **RESET**, the TX, RX, and RX Error statistics start from zero.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
"PEEP" with embedded Communication dump facility (5.4) Useful tool for capturing communication data for analyzing and locating possible pending communication troubles.	Menu navigation: **5. Diagnostics** > 5.4 Peep	**Info**: The "PEEPER" applet requires JAVA to be installed on the PC. Peep traces can be requested by GVR Help Desk. **Action**: For more details, refer to "Peeper (Menu 5.4)" on page 87. Start "PEEP" in short form. Mark "Peep" in left column on port 11,12,13,14. Type in the following: User ID: "your short name/company" **Notes**: The malfunction to be captured for analysis. **Filename**: **C:\peepfile** (if changed, the full path shall exist before start peeping) **Max size** (KB): 500 (change to 1000 Kb) Mark the check box for "x" Increment Extension When ready, click **START PEEP**. The Peep applet has a digital signature from VeriSign to prove that it is an authentic Gilbarco applet. Accept and click **Yes** to continue. Depending on the Java version installed, it can prompt for username/password. Type in username/password required for accessing the PAM 5000 with the rights for peeping. **Username**: admin **Password**: password Start peeping by clicking **START**. Check if the peep is running when the window text field displays: Starting peep…. Filename = **C:\peepfile.c00** .C02 After a while the data counter and the bar increase with blue color - as a result of the ongoing communication dump. The peep is running. If WRONG PATH OR DIRECTORY, the window text field will display; **C:\peepfile\Testpeep.c00** (The system cannot find the path specified) Steps to follow: Correct the directory path or close the Peep applet window and change the path in the Peep setup menu 5.4 Peep, and click **START PEEP** again. When peep is running: Perform the action to reproduce the malfunction, or leave the peep applet running until the malfunction occurs, click **STOP** to save the file. Do not close the browser window when peeping, or before pressing the Stop button. Translate the file with the program "PEEPSHOW" ~ OR ~ Send the files to GVR Help Desk for analysis.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
DSB Modules PAM POS Visible inspection by checking the LEDs DSB 500, POS, RS-232/ 422/CL	Open the PAM 5000 cabinet and watch the LEDs on the DSB Modules	**Info**: DSB 500, selectable interface for type in use RS-232/422/CL passive, no jumpers, use only one Interface type at the time. **Check**: PAM POS online to PAM 5000 (configured or un-configured) Watch the DSB 500 module, PAM POS is the master, Blank: Green TX before RX from POS. Green LED flashing = TX to POS, Red LED flashing = RX from POS. Red LED stay OFF, No polling from POS, or check wiring (TX/RX crossed) Red LED Flashing = RX from POS, But Green LED stays OFF = Wrong baud rate settings. **Action**: Check or correct "PAM baud rate setting" in Protocol To Port Assignment (menu 2.1) ~ OR ~ via Local Service Panel PAM related settings (menu 2.5).
DSB Modules PUMP/CRIND, Visible inspection by checking the LEDs DSB 492, CL, PUMP/ CRIND	Open the PAM 5000 cabinet and watch the LEDs on the DSB Modules	**Info**: DSB 492, CL 45 mA, 8 connectors with STAR connection, no jumpers, unused connector leaves "open" (no links) **Check**: Pumps online to PAM 5000 (configured or un-configured) Watch the DSB 492 module, Green LED flashing = TX to all pumps, Red LED flashing = RX from pump Red LED OFF: Device is connected but not in operation Red LED ON: Line is broken or wired wrongly (crossed)

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action
Central Processor Board CPB509 Visible inspection by checking CPB509 LEDs APPL/BOOT - and Display	Open the PAM 5000 cabinet and watch the LEDs on Central Processor Board CPB509	**Info**: **Check**: Normal mode, Display shows application version and time such as 410-27-1xx 11:38 W&M: ↓ SERVICE: ↑ Red LED APPL= Flashing Red LED BOOT= Off **Action**: None In BOOT mode (during SW. upload) 499-01-1xx 11:38 W&M: ↓ SERVICE: ↑ Red LED APPL= Off Red LED BOOT= Flashing **Action**: Continue with Upload Software application if it was interrupted. ~ OR ~ Remove Allow Soft Upload in menu 2.6 and perform a "Reset" (menu 4.1). The system is now back in normal operation mode. If there is no action within 10 minutes time out, it starts up the application automatically. An Internal Error occurred 410-27-1xx DEAD C=xxx P=yyy PAM 5000 continues to try and restart the application, if it fails, it stays in "DEAD". **Action**: Note down the C=xxx and P=yyy numbers Only via PAM 5000 web page (local or remote): Copy all text from Board Error Log menu 5.2.5 into a file. Navigate to menu 4. Reset. Perform a Soft Reset (4.1). Wait for 20-30 seconds. Check if the system runs. If system still fails, continue with performing a Master Reset (menu 4.2). If all above fails, perform a Super Master Reset (menu 4.3). Remember PAM is set back to factory settings PAM baud rate PAM related settings. Send the "C" and "P" code together with the captured "Board Error Log" text to GVR Help Desk for further investigation.

Common Service Menus	Navigation to Menus	Info/Watch/Check/Action

Central Processor Board CPB509
 	
Visual inspection by checking
CPB509 LEDs 5 V and 3 V
Fuse for power inlet AC power
	Open the PAM 5000 cabinet and watch the LEDs on Central Processor Board CPB509.	**Info**:
		Normal mode, the display shows application version and time such as
		
		410-27-1xx 11:38
		W&M: ↓ SERVICE: ↑
		
		Yellow LED 5 V = ON
		Yellow LED 3 V = ON
		
		Action 1:
		If no display data or Yellow LED is on,
		check the fuse at the AC inlet socket; replace if blown.
		The fuse drawer is divided into two sections to make rooms for a spare one.
		
		Action 2:
		If display data and both 5 V and 3 V LED are ON but communication troubles exist with DSB Modules, perform the following:
		
		1. With an AC meter, measure 2 x 12 VAC at the power supply connector J22 on CPB board, where pin 2 is 0 V outlet.
		   The measurement must be as follows:
		   pin 1 and 2 = 12 VAC
		   pin 2 and 3 = 12 VAC
		2. If one 12 VAC missing, replace the Power supply transformer.
		
		Action 3:
		If 2 x 12 VAC is present, but one Yellow LED 5 V or 3 V is OFF, replace the CPB 509 board.

Appendix F: PAM 1000/PAM 5000 Configuration Defaults

Shown below are the default PAM 1000 jump jack settings and the corresponding default PAM 5000 programmable settings.

Configuration Item	PAM 1000	PAM 5000	Settable via LSP? (Local Service Panel)
1 Pump loop configuration	Loop #1 1 - 12 Loop #2 13 - 24 Loop #3 25 - 36 *(Note: The pump ID's on each loop are set to 1 - 12 max)*	Loop #1 1 - 16 Loop #2 17 - 32 *3 Loop #3 33 - 36 *3 *(Note: Using the default, the pump ID's on each loop are set to 1 - 16 max)* (optional legacy config *1) Loop #1 1 - 12 Loop #2 13 - 24 *3 Loop #3 25 - 36 *3 *(Note: Using the legacy config, the pump ID's on each loop are set to 1 - 12 max)*	Yes - Menu 2.5 The menu is used only to select 16 fueling positions per loop (default) vs. 12 fueling positions per loop. <u>The pump ID's must agree with the configuration (12 or 16) and must be set at EACH dispenser.</u>
2 POS to PAM i/f options for pump control	RS-232	RS-232 *4 (optional configuration) RS422 or 45 ma current loop input	N/A (DSB 500 module supports all 3 inputs)
3 CRIND loop configuration (hardware pass through only)	N/A	Loop #1 1 - 16 *2 (optional configuration) Loop #1 17 - 32 *3	N/A
4 POS to PAM i/f options for CRIND control	N/A	(optional configuration) RS232, RS422 or 45 ma current loop input	N/A (DSB 500 module supports all 3 inputs)
5 Dispenser baud rate	5787 (JP 1 position 'A') (optional configuration) 4800 (JP 1 position 'B')	5787 (optional configuration *1) 4800	No (can be changed via web interface only, Menu 2.1)
6 POS Baud rate	2400 (JP 2 - JP 4 *5) (optional configuration) 300 - 19,200 (JP 2 - JP 4 *5)	4800 (optional configuration *1) 300 - 19,200	Yes - Menu 2.5

Configuration Item	PAM 1000	PAM 5000	Settable via LSP? (Local Service Panel)
7 Four Minute De-auth timer	Disabled (JP 5 position 'B') (optional configuration) Enabled (JP 5 position 'A')	Disabled (optional configuration *1) Enabled	Yes - Menu 2.5
8 Third pump loop (pump positions 25 - 36)	Disabled (JP 6 position 'B') PAM 1000 will return status of only positions 1 - 24 (optional configuration) Enabled (JP 6 position 'A') PAM 1000 will return status of all positions 1 - 36.	Disabled PAM 5000 will return status of only positions 1 - 24, even if loops configured for 16 fueling positions per. (optional configuration *1) Enabled PAM 5000 will return status of all positions 1 - 36.	Yes - Menu 2.5
9 Non-buffered/ buffered price mode	Non-buffered price mode (JP 7 position 'B') (optional configuration) Buffered price mode (JP 7 position 'A')	Buffered price mode (optional configuration *1) Non-buffered price mode	Yes - Menu 2.5
10 Price change mode	Prices sent to pumps in IDLE or CALL (JP 8 position 'B') (optional configuration) Prices sent to pumps only in IDLE (JP 8 position 'A')	Prices sent to pumps in IDLE or CALL (optional configuration *1) Prices sent to pumps only in IDLE	Yes - Menu 2.5
11 N/A	JP 9 not used	N/A	N/A
12 Cold start	Normal operation (JP 10 position 'A') (optional configuration) Cold start (JP 10 position 'B')	Normal operation (optional configuration *1) Super Master Reset (clears all memory and resets PAM 5000 to factory settings)	Yes - Menu 2.5
13 POS Offline Delay to PUMP STOP *6	N/A	5 sec (optional configuration *1) 0 - 30 sec	Yes - Menu 2.5

Notes: 1) Optional configuration must be set via Local Service Panel or Web Interface.

2) Configuration requires optional CRIND expansion kit (M08037B002).

3) Configuration requires additional Current Loop expansion kit (M08037B001).

4) For RS-232 runs between 50 and 100 feet between POS and PAM 5000, a signal booster is recommended. For RS-232 runs > 100 feet a signal.

5) See table below for Baud Rate settings on PAM 1000.

	300	1200	2400 (Default)	4800	9600	19,200	1200 (repeated)
JP2	A	A	A	B	B	B	A
JP3	A	B	B	A	A	B	A
JP4	B	A	B	A	B	A	A

6) POS Offline Delay to PUMP STOP

This should be reprogrammed to 15 seconds for Ruby installations, to avoid BUSY pumps being stopped when operators perform an 'init' at the Ruby (resulting in re-grade mapping and the sending of prices to dispensers).

7) Settable via LSP?

The LSP is located on the PAM 5000 CPU board and is composed of a 2x16 LCD display plus five push buttons for navigation (refer to the appropriate sections of this manual, for use of the LSP).